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# BIBLIOGRAPHY ON SHOCK WAVES IN SOLIDS

D. L. Lehto

Naval Ordnance Laboratory
White Oak, Maryland

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13 ABSTRACT

About 850 references are given to books, articles, and reports on theoretical and experimental aspects of shocks in solids. The topics include computer codes, composite media, and equations of state.

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**ABSTRACT:** About 850 references are given to books, articles, and reports on theoretical and experimental aspects of shocks in solids. The topics include computer codes, composite media, and equations of state.

Air/Ground Explosions Division
Explosions Research Department
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Silver Spring, Maryland

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Bibliography on shock waves in solids.

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R. WILLIAMSON II
Captain, USN
Commander

C. J. ARONSON
By direction

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# I. INTRODUCTION

This collection consists of material examined by the author as background for his work on the Amorphous Semiconductor Devices and the Reentry Vehicle Materials Technology (REVMAT) tasks.

This is not an exhaustive compendium on shock waves in solids; however, the author's colleagues have found it extensive enough to be useful to them. The strongest sections are those on computer codes and waves in composite materials. There are some conspicuous omissions: e.g., shock-induced phase changes and dislocations are not covered. For extensive references on hypervelocity impact, see Kinslow's recent book (p. 16).

These references consist of books, journal articles, and laboratory reports. This last category is rather incomplete; only those reports that I have been able to obtain relatively easily and that have no distribution limitations are listed. Items with an AD or PB number may be obtained from NTIS. The parenthetical remarks are mine except where they are enclosed in quotation marks. The absence of remarks implies either that the title is adequately descriptive or that I can't think of anything to say.

The format of the author index can be readily discovered by the reader.

## II. WAVES IN SOLIDS
### A. Bibliographies


Stromer, P.R. "Shock Wave Propagation in Solids: An Annotated Bibliography," Lockheed MSC Special Bibl. SB-63-31, AD419449, 61pp, Mar 1963.

Christman, D.R. "A Selected Bibliography on Dynamic Properties of Materials," General Motors Technical Center MSL-70-06, DASA-2511, AD710823, 112pp, Jun 1970.

Anon "Bibliography on High Pressure Research," High Pressure Data Center, 574 Clark Library, Brigham Young University, Provo, Utah 84601. (Volume V, 1972, is in six issues.)

B. Theory (before 1960)


Mason, W.P.
McSkimin, H.J. "Energy Losses of Sound Waves in Metals Due to Scattering and Diffusion," J.Appl.Phys. 19:940-946 (1948).

DeJuhasz, K.J. "Graphical Analysis of Impact of Bars Stressed Above the Elastic Range," J.Franklin Inst. 248:15-48 & 113-142 (1949). (Includes bibliography on impact.)

Murnaghan, F.D. "The Foundations of the Theory of Elasticity," in Proc. Symposia Appl.Math. I. Non-Linear Problems in Mechanics of Continua (Am.Math.Soc., 1949) pp 158-174.

Kolsky, H. Stress Waves in Solids (Clarendon, Oxford, 1953, reprinted by Dover.)

Murnaghan, F.D. Finite Deformation of an Elastic Solid (Wiley, N.Y., 1951, 140pp.) (Rather unfavorably reviewed by Truesdell in Bull.Am.Math.Soc. 58:577-9 (1952).)

Blake, F.G.,Jr. "Spherical Wave Propagation in Solid Media," J.Acoust.Soc.Am. 24:211-215 (1952).

Wood, D.S. "On Longitudinal Plane Waves of Elastic-Plastic Strain in Solids," J.Appl.Mech. 19:521-525 (1952).

Malvern, L.E. "Plastic Wave Propagation in a Bar of Material Exhibiting a Strain Rate Effect," Quart.Appl.Math. 8:405-411 (1951).

Davies, R.M. "Stress Waves in Solids," in G.K. Batchelor & R.M. Davies (eds.) Surveys in Mechanics (Cambridge, 1956) pp 64-138.

Deresiewicz, H. "Plane Waves in a Thermoelastic Solid," J.Acoust.Soc.Am. 29:204-9 (1957).

Drummond, W.E. "Multiple Shock Production," J.Appl.Phys. 28:998-1001 (1957). (Shocks in solids with phase transitions. Two compression shocks and a rarefaction shock are produced.)

Thomas, T.Y. "The Decay of Waves in Elastic Solids," J.Math.Mech. 6:759-768 (1957).

Bowsher, J.M. "On 'Plastic' Waves in Solids," Can.J.Phys. 37:1017-35 (1959).

Morland, L.W. "The Propagation of Plane Irrotational Waves Through an Elastoplastic Medium," Phil.Trans.Roy.Soc.London A251:341-383 (1959).

Musgrave, M.J.P. "The Propagation of Elastic Waves in Crystals and Other Anisotropic Media," Reports Prog.Phys. XXII:74-96 (1959).

B. Theory (before 1960, cont'd)


White, M.P.
Griffis, L. — "The Propagation of Plasticity in Uniaxial Compression," J.Appl.Mech. 15:256-260 (1948).

White, M.P. — "On the Impact Behavior of a Material With a Yield Point," J.Appl.Mech. 16:39-52 (1949).

Lee, E.H.
Wolf, H. — "Plastic-Wave Propagation Effects in High-Speed Testing," J.Appl.Mech. 18:379-386 (1951).

Lee, E.H.
Tupper, S.J. — "Analysis of Plastic Deformation in a Steel Cylinder Striking a Rigid Target," J.Appl.Mech. 21:63-70 (1954).

Davies, R.M. — "Stress Waves in Solids," Appl.Mech.Rev. 6:1-3 (1953). (Review article; 99 refs.)

Hazebroek, P. — "Elastic Waves From a Finite Line Source," Proc.Roy.Soc. A294:38-65 (1966). (The source is taken as the limit of an elongated ellipsoid of revolution loaded on the inside with a pressure that is a function of time.)

Jordan, D.W. — "The Stress Wave from a Finite, Cylindrical Explosive Source," J.Math.Mech. 11:503-551 (1962). (A uniform constant pressure is applied to a finite length of an infinite cylinder. The elastic wave is calculated by a double Fourier integral technique.)

Lessen, M. — "Thermoelastic Waves and Thermal Shock," J.Mech.Phys.Solids 7:77-84 (1959). -U.Penna.-

Knopoff, L.
MacDonald, G.J.F. — "Attenuation of Small Amplitude Stress Waves in Solids," Rev.Mod.Phys. 30:1178-92 (1958). -UCLA-

Ericksen, J.L. — "On the Propagation of Waves in Isotropic Incompressible Perfectly Elastic Materials," J.Rat.Mech.Anal. 2:329-337 (1953).

Timoshenko, S. — "The Propagation of Waves in Elastic Solid Medium," Chapter 12 of Theory of Elasticity (McGraw-Hill, N.Y., 1934).

B. Theory (cont'd; 1960-1963)


Hwang, S.-Y.
Davids, N. "Graphical Analysis of the Formation of Shock Fronts in Materials," J.Mech.Phys.Solids 8:52-65 (1960).

Herrmann, W.
et al "Stress Wave Propagation and Spallation in Uniaxial Strain," Mass.Inst.Tech. Technical Documentary Report No. ASD-TDR-62-399, AD288885, 125pp, Sep 1962.

Truesdell, C. "General and Exact Theory of Waves in Finite Elastic Strain," Arch.Rat.Mech.Anal. 8:263-296 (1961).

Flavin, J.N.
Green, A.E. "Plane Thermo-Elastic Waves in an Initially Stressed Medium," J.Mech.Phys.Solids 9:179-190 (1961). -Kings C.- (Small-amplitude waves in infinite body prestressed by extension in all directions.)

Shewmon, P.G.
Zackay, V.P.
(eds.) Response of Metals to High Velocity Deformation (Interscience, N.Y., 1961). (Metallurgical Society Conference, Estes Park, Colo., July 11-12, 1960).

Chadwick, P. "On the Propagation of Thermoelastic Disturbances in Thin Plates and Rods," J.Mech.Phys.Solids 10:99-109 (1962).

Chadwick, P. "Propagation of Spherical Elastic-Plastic Disturbances From an Expanded Cavity," Quart.J.Mech.Appl.Math. XV:349-376 (1962).

Duvall, G.E. "Shock Waves in the Study of Solids," Appl.Mech.Revs. 15:849-854 (1962).

Harris, P. "Decay of Elastic Precursor Waves," J.Appl.Phys. 34:3405 (1963). -NOL-

Huang, Y.K.
Davids, N. "Shock Dynamics of Hypervelocity Impact of Metals," J.Franklin Inst. 276:39-50 (1963). -S.Dak.St.Coll.- (Elementary analysis.)

Kolsky, H. "Stress Waves in Anelastic Solids," J.Geophys.Res. 68:1193-4 (1963). -Brown U.-

Duvall, G.E.
Fowles, G.R. "Shock Waves," in R.S. Bradley (ed.), High Pressure Physics and Chemistry (Academic Press, N.Y., 1963) pp 209-291.

Miklowitz, J. "Transient Wave Propagation in Elastic Rods and Plates," J.Geophys.Res. 68:1190-2 (1963). -CIT-

Jones, G.L.
Kobett, D.R. "Interaction of Elastic Waves in an Isotropic Solid," J.Acous.Soc.Am. 35:5-10 (1963).

Hopkins, H.G. "Dynamic Anelastic Deformation of Metals," Appl.Mech.Revs. 14(6):417-431 (1961).

Band, W. "Studies in the Theory of Shock Propagation in Solids," J.Geophys.Res. 65:695-719 (1960).

B. Theory (cont'd; 1960-1963)

Miklowitz, J. "Recent Developments in Elastic Wave Propagation," Appl.Mech.Rev. 13:865-78 (1960). -CIT- (Review article; 135 refs.)

Hill, R. "Acceleration Waves in Solids," J.Mech.Phys.Solids 10:1-16 (1962).

Truell, R.
Elbaum, C. "High Frequency Ultrasonic Stress Waves in Solids," in S. Flügge (ed.), Handbuch der Physik, Band XI/2, Akustik II (Springer-Verlag, Berlin, 1962) pp 153-258.

Duvall, G.E. "Concepts of Shock Wave Propagation," Bull.Seism.Soc.Am. 52:869-893 (1962). -SRI- (Tutorial article.)

B. Theory (cont'd; 1964-1965)


| | |
|---|---|
| Achenbach, J.D. | "Approximate Transient Solutions for the Coupled Equations of Thermoelasticity," J.Acous.Soc.Am. 36:10-18 (1964). -NWU- |
| Harris, P.<br>Greene, R.F. | "Decay of Elastic Waves in Solids with Dislocations," J.Appl.Phys. 35:2170-3 (1964). -NOL- |
| Bland, D.R. | "Dilatational Waves and Shocks in Large Displacement Isentropic Dynamic Elasticity," J.Mech.Phys.Solids 12:245-267 (1964). (Includes numerical solution for spherical tensile explosion.) |
| Erkman, J.O. | "Elastoplastic Effects in the Attenuation of Shock Waves," Proc. Fourth Sympos. Detonation 277-288 (1965). -SRI- |
| Butcher, B.M.<br>Munson, D.E. | "The Influence of Mechanical Properties on Wave Propagation in Elastic-Plastic Materials," Proc. Fourth Sympos. Detonation 295-304 (1965). -Sandia- |
| Erkman, J.O.<br>Duvall, G.E. | "Elastoplasticity and the Attenuation of Shock Waves," Proc. Ninth Midwestern Mech.Conf. 179-188 (1965). -SRI- |
| Konstantinov, G.G.<br>Marchenko, L.L.<br>Shkhinek, K.N. | "Wave Propagation in a Finite Elastoplastic Bar with Longitudinal Impact," Combustion, Explosion, and Shock Waves 1:39-42 (1965). |
| Lindholm, U.S.<br>Doshi, K.D. | "Wave Propagation in an Elastic Nonhomogeneous Bar of Finite Length," J.Appl.Mech. Mar 1965, 135-142. -SWRI- (Continuously varying modulus of elasticity.) |
| Bland, D.R. | "On Shock Structure in a Solid," J.Inst.Maths.Applics. 1:56-75 (1965). -U.Manch.- (With 2nd order convective & dissipative effects.) |
| Al'tshuler, L.V. | "Use of Shock Waves in High-Pressure Physics," Soviet Physics-Uspekhi 8:52-91 (1965). |
| McDowell, E.L. | "Deviatoric Effects in High Intensity Stress Waves," IIT Res. Inst., AFWL-TR-65-15, AD620334, 76pp, Aug 1965. |
| Heyda, J.F.<br>Riney, T.D. | "Peak Axial Pressures in Semi-Infinite Media Under Hypervelocity Impact," GE Space Sci. Lab. R64SD87, Reprint No. 290, 46pp, Nov 1964. |

B. Theory (cont'd; 1964-1965)


Riney, T.D.
Heyda, J.F. "Hypervelocity Impact Calculations and Their Correlation With Experiment," GE Space Sci. Lab. R64SD64, AD606123, 53pp, Sep 1964.

Chu, B.-T. "Finite Amplitude Waves in Incompressible Perfectly Elastic Materials," J.Mech.Phys.Solids 12:45-57 (1964).

Green, W.A. "The Growth of Plane Discontinuities Propagating into a Homogenecusly Deformed Elastic Material," Arch.Rat.Mech.Anal. 16:79-88 (1964).

Thurston, R.N. "Wave Propagation in Fluids and Normal Solids," in W.P. Mason (ed.), Physical Acoustics, Volume I-Part A (Academic Press, N.Y., 1964) pp 1-110. (Small-amplitude waves.)

Coleman, B.D.
Gurtin, M.E.
Herrera R., I. "Waves in Materials with Memory," Arch.Rat.Mech.Anal. 19:1-19, 239-265, 266-298, 317-338 (1965).

Gylden, N. "On the Similarity Between Compressible, Nonviscous Flows in Metals," J.Appl.Phys. 36:2082 (1965).

Valanis, K.C. "Propagation and Attenuation of Waves in Linear Viscoelastic Solids," J.Math.&Phys. 44:227-239 (1965).

Varley, E. "Acceleration Fronts in Viscoelastic Materials," Arch.Rat.Mech.Anal. 19:215-225 (1965).

Wallace, D.C. "Lattice Dynamics and Elasticity of Stressed Crystals," Rev.Mod.Phys. 37:57-67 (1965). -Sandia-

Varley, E.
Dunwoody, J. "The Effect of Non-Linearity at an Acceleration Wave," J.Mech.Phys.Solids 13:17-28 (1965).

B. Theory (cont'd; 1966)


Clifton, R.J.
Bodner, S.R.
"An Analysis of Longitudinal Elastic-Plastic Pulse Propagation," J.Appl.Mech. 33:248-255 (1966). (Long uniform bar loaded by short pulse at end.)

Mehta, P.K.
Davids, N.
"A Direct Numerical Analysis Method for Cylindrical and Spherical Elastic Waves," AIAA J. 4:112-7 (1966). (See corrections in AIAA J. 9:1887-8 (1971).)

Pearson, J.C.
"Hydrodynamic Elastic Plastic Theory and Plane Shock Waves in Metals," Picatinny Arsenal, AD634630, 15pp, Jun 1966. (Apparently from conference proceedings.)

Tsai, D.H.
Beckett, C.W.
"Shock Wave Propagation in Cubic Lattices," J.Geophys.Res. 71:2601-8 (1966).

Butcher, B.M.
Karnes, C.H.
"Strain-Rate Effects in Metals," J.Appl.Phys. 37:402-411 (1966). -Sandia-

Doran, D.G.
Linde, R.K.
"Shock Effects in Solids," in Solid State Physics, Advances in Research and Applications, Volume 19 (Academic Press, N.Y., 1966). -SRI-

Collins, W.D.
"One-Dimensional Non-Linear Wave Propagation in Incompressible Elastic Materials," Quart.J.Mech.Appl.Math. XIX:259-328 (1966).

Zababekhin, E.I.
Simonenko, V.A.
"Discontinuities of Shock Adiabats and the Non-Uniqueness of Some Shock Compressions," Soviet Physics-JETP 25:876-7 (1967).

Harris, P.
"Weak Shocks in Solids," J.Acoust.Soc.Am. 40:226-9 (1966). (Burgers equation is used.)

B. Theory (cont'd; 1967)


Fine, A.D. — "On Elastic-Plastic Wave Propagation," J.Franklin Inst. 283:203-213 (1967). (Unloading waves.)

Lee, E.H.; Wierzbicki, T. — "Analysis of the Propsgation of Plane Elastic-Plastic Waves at Finite Strain," J.Appl.Mech. 34:931-6 (1967).

Lee, E.H.; Liu, D.T. — "Finite-Strain Elastic-Plastic Theory with Application to Plane-Wave Analysis," J.Appl.Phys. 38:19-27 (1967). ("In the generation of plane waves in metal plates by detonation of contact explosives, the pressures reached can be sufficiently high to produce finite elastic and plastic strain components, and appreciable changes in temperature due to thermomechanical coupling effects. A theory of elastic-plastic deformation is developed to include these conditions....")

Collins, W.D. — "The Propagation and Interaction of One-Dimensional Non-Linear Waves in an Incompressible Isotropic Elastic Half-Space," Quart.J.Mech.Appl.Math. 20:429-452 (1967).

Chou, P.C.; Mortimer, R.W. — "Solution of One-Dimensional Elastic Wave Problems by the Method of Characteristics," J.Appl.Mech. 34:745-750 (1967). (Numerical integration; medium may be nonhomogeneous.)

Gurtin, M.E.; Walsh, E.K. — "Extrinsically Induced Acceleration Waves in Elastic Bodies," J.Acoust.Soc.Am. 41:1320-4 (1967).

Chou, P.C.; Burns, B.P. — "Late-Stage Equivalence in One-Dimensional Impact," J.Appl.Phys. 38:553-560 (1967). (Method of characteristics calculations for aluminum and copper.)

Clifton, R.J. — "A Difference Method for Plane Problems in Dynamic Elasticity," Quart.Appl.Math. 25:97-116 (1967). (Same as Lax-Wendroff scheme for interior points.)

B. Theory (cont'd; 1968)


Dremin, A.N.
Breusov, O.N.
"Processes Occurring in Solids Under the Action of Powerful Shock Waves," Russ.Chem.Revs. 37:392-402 (1968). (Effects of shear on reactions.)

Francis, P.H.
Lindholm, U.S.
"Effect of Temperature Gradients on the Propagation of Elastoplastic Waves," J.Appl.Mech. Sep 1968, 441-8.

Bert, C.W.
Cummings, B.E.
"Some Strong Wave Problems in an Elastic Material With Microstructure," General Research Corp., Santa Barbara, GR-0484-1, AD680236, 58pp, Jun 1968.

Clifton, R.J.
et al
"The Elastic-Plastic Boundary in One-Dimensional Wave Propagation," Stanford Res.Inst., BRL-CR-9, AD674755, 10pp, Feb 1968.

Nen, N.
"Elastic-Plastic Waves for Combined Stresses," Stanford U., Dept. of Appl.Mech., Tech.Report 184, AD678480, 84pp, Jul 1968. (For BRL).

Shieh, R.C.
"Analysis of Wave Propagation in a Nonlinear Strain-Hardening Medium," U.Calif. San Diego, DASA-2164, AD679653, 40pp, Sep 1968.

Grot, R.A.
"Relativistic Theory of the Propagation of Wave Fronts in Non-Linear Elastic Materials," Int.J.Engg.Sci. 6:295-307 (1968). -Peru-
("Relations generalizing the classical results of nonlinear elasticity are derived for the existence of wave fronts and specific results for the wave velocity propagating along a principal direction are given for isotropic materials.")

B. Theory (cont'd; 1968)


Duvall, G.E. — "Shock Waves in Solids," in B.M. French & N.M. Short (eds.), Shock Metamorphism of Natural Materials (Mono Book Corp., Baltimore, 1968), pp 19-29. (Introductory article.)

Faccioli, E.
Ang, A.H.-S. — "A Discrete Eulerian Model of Spherically Symmetric Compressible Media," J.Comput.Phys. 3:226-258 (1968).

Herrmann, W. — "Basic Response Phenomenology and Analytical Techniques," Sandia Labs. SC-R-68-1784, 46pp, Aug 1968. (Introductory; reprinted from Proceedings of the X-Ray Effects Conference, Vol. 1, Material Response, July 11-13, 1967 at Battelle Memorial Institute, Columbus, Ohio.)

Boley, B.A.
Hetnarski, R.B. — "Propagation of Discontinuities in Closed Thermoelastic Problems," J.Appl.Mech. 35:489-494 (1968).

Gilman, J.J. — "Dislocation Dynamics and the Response of Materials to Impact," Appl.Mech.Revs. 21:767-783 (1968). (Review article; 80 refs.)

B. Theory (cont'd; 1969)


Chou, S.C. et al — "Stress-Wave Propagation in a Class of Nonhomogeneous Elastic Media," AIAA J. 7:1710-6 (1969). -Army MMRC-

Costantino, C.J. — "Two Dimensional Wave Propagation Through Nonlinear Media," J.Comput.Phys. 4:147-170 (1969). -CCNY-

Duvall, G.E. et al — "Steady Shock Profile in a One-Dimensional Lattice," J.Appl.Phys. 40:3771-5 (1969). -Wash.St.U.-

Horie, Y. — "Numerical Integration of Plane Elastic-Relaxing Plastic Shock Waves by a Two-Step Method," J.Appl.Phys. 40:5368-73 (1969). -NCSU-

Manvi, R. Duvall, G.E. Lowell, S.C. — "Finite Amplitude Longitudinal Waves in Lattices," Int.J.Mech.Sci. 11:1-8 (1969). -Wash.St.U.- (Semi-infinite chain of mass points with linear and non-linear nearest neighbor interaction.)

Miklowitz, J.(ed.) — Wave Propagation in Solids (Am.Soc.Mech.Engrs., N.Y., 1969), 183pp, presented at ASME Winter Annual Mtg., L.A., Nov 1969.
- L. Knopoff, "Elastic Wave Propagation in a Wedge,"
- J. Miklowitz, "Analysis of Elastic Waveguides Involving an Edge,"
- R.A. Scott, "Transient Anisotropic Waves in Bounded Elastic Media,"
- E.Varley,et al, "Modulated Simple Waves: An Approach to Attenuated Finite Amplitude Waves,"
- E.H. Lee, "Some Recently Developed Aspects of Plastic Wave Analysis," -Stanford U.-
- W. Herrmann, "Nonlinear Stress Waves in Metals".

Morland, L.W. Cox, A.D. — "Existence and Uniqueness of Solutions to Uni-Axial Elastic-Plastic Wave Interaction," Phil.Trans.Roy.Soc.London A264(1154):497-556 (1969).

Naghdi, P.M. Balaban, M.M. Green, A.E. — "Acceleration Waves in Elastic-Plastic Materials," U. Calif. Berkeley, AD695960, 44pp, 1969.

B. Theory (cont'd; 1969)


Rausch, P.J. "The Effect of Heating Time on Thermally Induced Stress Waves," J.Appl.Mech. 36:340-2 (1969). -Aerospace-

Rausch, P.J. "Shock Propagation in a Strain-Hardening Material," J.Appl.Mech. 36:181-8 (1969). (Response to nonuniform, instantaneous internal heating.)

Schwartz, M. "Graphical Representation of Plane Elastic Wave Propagation in Flat Plates," J.Appl.Phys. 40:4503-6 (1969). -Frankford Arsenal-

Waterston, R.J. "One-Dimensional Shock Waves and Acceleration Fronts in Non-Linear Viscoelastic Materials," Quart.J.Mech.Appl.Math. XXII:261-281 (1969).

Lee, E.H. "Elastic-Plastic Deformation at Finite Strain," J.Appl.Mech. 36:1-6 (1969). -Stanford U.-

B. Theory (cont'd; 1970)

Burniston, E.E.
Chang, T.S.
"Some One-Dimensional Solutions of Nonlinear Waves of a Rate-Sensitive, Elastoplastic Material," North Carolina State U., Raleigh, TR-70-1, AD699921, 40pp, Jan 1970.

Denyluk, H.T.
et al
"A Note on Elastic-Plastic Flow," Quart.Appl.Math., Oct 1970, pp 454-7. -U.Alberta- ("The plane plastic flow of an incompressible elastic perfectly-plastic solid that obeys the Mises yield con ition and a properly invariant form of the Prandtl-Reuss equations is considered.")

Fowles, R.
Williams, R.F.
"Plane Stress Wave Propagation in Solids," J.Appl.Phys. 41:360-3 (1970). -Wash.St.U.- (Theoretical.)

Fowles, R.
"Conservation Relations for Spherical and Cylindrical Stress Waves," J.Appl.Phys. 41:2740-1 (1970). -Physics Int'l-

Gillis, P.P.
Kelly, J.M.
"Thermal Effects in Shocks in Viscoplastic Solids," J.Mech.Phys.Solids 18:397-412 (1970). -U.Kent.-

Habberstad, J.L.
"Axisymmetric Elastic Wave Propagation in Bars Containing a Discontinuity," Wash.St.U. WSU-SDL-70-C4, AD716547, 215pp, Sep 1970.

Pastine, D.J.
O'Keeffe, D.J.
"Theoretical Estimates of Elastic Relief Wave Velocities for Metals with Applications to Al and Cu," J.Appl.Phys. 41:2743 (1970). -NOL-

Huang, Y.K.
"Some Problems of Non-Linear Stress Waves in Solids," Watervliet Arsenal WVT-7039, AD712991, 16pp, Jul 1970. (Dynamic loading by explosive or impact.)

Godunov, S.K.
Deribas, L.A.
Zabrodin, A.V.
Kozin, N.S.
"Hydrodynamic Effects in Colliding Solids," J.Comput.Phys. 5:517-539 (1970).

Bertholf, L.D.
Oliver, M.L.
"Approximate Analytic Expression for the Attenuation of a Triangular Pressure Pulse with Distance," Sandia Labs. SC-RR-69-596, 59pp, Feb 1970. (Numerical results are given for aluminum.)

B. Theory (cont'd; 1970)

Kinslow, R.(ed.) High-Velocity Impact Phenomena (Academic Press, N.Y., 1970).
A.J. Cable, "Hypervelocity Acceleretors," -AEDC-
N.L. Hickerson, "Stress Wave Propagation in Solids,"
J.K. Dienes & J.M. Walsh, "Theory of Impact: Some General Principles and the Method of Eulerian Codes," -Gulf GA-
J.W. Gehring,Jr., "Theory of Impact in Thin Targets and Shields and Correlation with Experiment,"
T.D. Riney, "Numerical Evaluation of Hypervelocity Impact Phenomena,"
W.J. Rae, "Analytical Studies of Impact-Generated Shock Propagation: Survey and New Results," -CAI-
R.G. McQueen, et al, "The Equation of State of Solids from Shock Wave Studies," -LASL-
R.B. Pond & C.M.Glass, "Metallurgical Observations and Energy Partitioning,"
J.W. Gehring, Jr., "Engineering Considerations in Hypervelocity Impact".

Nakano, T. "Numerical Computation of the Shock Wave Diffracted by a Circular Cylindrical Cavity in Elastic-Plastic Media," Cold Regions Res. & Engg. Lab. CRREL-RR-279, AD702906, 27pp, Jan 1970.

Lepik, Ü. "On the Propagation of Plane Shock Waves in a Thick Plate," Arch.Mech.Stosowanej 22(5):571-583 (1970).
(Pressure pulse of about 100 kbar is applied to one surface of an infinite plate; several approximate solutions are carried out.)

B. Theory (cont'd; 1971)


Ahrens, T.J.
Urtiew, P.A.
"The Use of Shock Waves in the Vaporization of Metals," Lawrence Livermore Lab. UCRL-51109, 46pp, Aug 1971

Chen, P.J.
"One Dimensional Shock Waves in Elastic Non-Conductors," Arch.Rat.Mech.Anal. 17:350-362 (1971).

Chen, P.J.
Gurtin, M.E.
"The Growth of One-Dimensional Shock Waves in Elastic Nonconductors," Int.J.Solids Structures 7:5-10 (1971).

Edwards, D.J.
Erkman, J.O.
"Acceleration of Aluminum Foils by Shocks in PMMA," Naval Ordnance Lab. NOLTR 70-266, 24pp, Mar 1971. (WONDY calculations and graphical solutions.)

Horie, Y.
"Adiabatic Theory of Plane Steady Shock Profiles in Solids," J.Appl.Phys. 42:2925-33 (1971).

Huang, Y.K.
"Interrelationship Between Acoustic and Shock-Wave Properties of Solids," J.Appl.Phys. 42:4084-5 (1971).

Mehta, P.K.
Davids, N.
Patel, N.T.
"Comment on 'A Direct Numerical Analysis Method for Cylindrical and Spherical Blast Waves'," AIAA J. 9:1887-8 (1971). (Corrections to previous article, AIAA J. 4:112 (1966).)

Raniecki, B.
"The Influence of Dynamical Thermal Expansion on the Propagation of Plane Elastic-Plastic Stress Waves," Quart.Appl.Math. July 1971, 277-290.

Sedov, A.
Nariboli, G.A.
"Visco-Elastic Waves by the Use of Wave-Front Theory," Int.J.Non-Linear Mech. 6:615-624 (1971). (Weak shock structures; rate-type viscoelastic materials.)

Thomsen, L.
"Elastic Shear Moduli and Crystal Stability at High P and T," J.Geophys.Res. 76:1342-8 (1971). ("...new theoretical expressions for the elastic velocities of a cubic or isotropic homogeneous solid) as functions of density and temperature...")

Ting, T.C.T.
"On the Initial Speed of Elastic-Plastic Boundaries in Longitudinal Wave Propagation in a Rod," J.Appl.Mech. 38:441-7 (1971).

Whitesides, J.L.
Yuan, S.W.
"Viscous Effects on Hypervelocity Impact," J.Appl.Phys. 42:4156-9 (1971). (Analytic solution; spherical projectile & target.)

Zarembo, L.K.
Krasil'nikov, V.A.
"Nonlinear Phenomena in the Propagation of Elastic Waves in Solids," Soviet Physics-Uspekhi 13:778-797 (1971).

B. Theory (cont'd; 1971)

Henneke, E.G.II — "Reflection-Refraction of a Stress Wave at a Plane Boundary Between Anisotropic Media," J.Acoust.Soc.Am. 51:210-7 (1971). -Fla.St.U.-

Yang, J.C.S. — "Elastic-Plastic Wave Cancellation in Energy-Absorbing Materials," AIAA J. 9:2451-3 (1971). -NOL-
(Mitigation by overtaking of plastic wave by elastic waves.)

Walton, O.R. — "A Wave Propagation Model for Impulse Prediction," Lawrence Radiation Lab. UCRL-51102, 17pp, Jul 1971.
(Melt-dominated blowoff impulse; accustic wave model.)

Caldirola, P.
Knoepfel, H.
(eds.) — Physics of High Energy Density (Academic Press, N.Y., 1971). Proc. Intern. School of Physics, "Enrico Fermi", Course XLVIII. Includes:

G.E. Duvall "Shock Waves in Condensed Media"
R.N. Keeler & E.B. Royce, "Shock Waves in Condensed Media: Experimental Techniques", "High-Pressure Equations of State from Shock-Wave Data", etc.

B. Theory (cont'd; 1972)

| | |
|---|---|
| Paskin, A.<br>Dienes, G.J. | "Molecular Dynamic Simulations of Shock Waves in a Three-Dimensional Solid," J.Appl.Phys. 43:1605-10 (1972). (Lennard-Jones potential.) |
| Johnson, J.N. | "Calculation of Plane-Wave Propagation in Anisotropic Elastic-Plastic Solids," J.Appl.Phys. 43:2074-82 (1972). |
| Chang, H.L.<br>Horie, Y. | "Analysis of Plane Shock Structures in 606-T6 Aluminum," J.Appl.Phys. 43:3362-6 (1972). |
| Tasi, J. | "Perturbation Solution for Growth of Nonlinear Shock Waves in a Lattice," J.Appl.Phys. 43:4016-21 (1972). (One-dimensional lattice with velocity step applied to the first mass.) |
| Nayfeh, A.H.<br>Nemat-Nasser, S. | "Elastic Waves in Inhomogeneous Elastic Media," J.Appl.Mech. 39:696-702 (1972). (WKB solution.) |

1. Shock Velocity vs. Particle Velocity


Pastine, D.J.
Piacesi, D.
"The Existence and Implications of Curvature in the Relation Between Shock and Particle Velocities for Metals," J.Phys.Chem.Solids 27:1783-92 (1966). NOL-

Ruoff, A.L.
"Linear Shock-Velocity-Particle-Velocity Relationship," J.Appl.Phys. 38:4976-80 (1967). -Cornell U.-
(Theoretical reason for the linear relationship.)

Pastine, D.J.
"Interpolation Formula for the Relationship Between Shock Velocity, $u_s$, and Particle Velocity, $u_p$, in Solids," J.Appl.Phys. 40:440-1 (1969). -NOL-

Urtiew, P.A.
"Reflected Shock-Velocity-Particle Velocity Relationship in Solids," J.Appl.Phys. 40:3962-7 (1969). -LRL-

O'Keeffe, D.J.
"Effects of High Pressure on the Thermal Expansion of Solids with a Linear $U_s$-$u_p$ Relationship," J.Appl.Phys. 41:5101-2 (1970). -NOL-

Prieto, F.E.
Renero, C.
"Equation for the Shock Adiabat," J.Appl.Phys. 41:3876-83 (1970). -U.Nac.Mexico-
(Discusses the quadratic $U_s$-$u_p$ relation.)

Prieto, F.E.
Renero, C.
"Reduced Hugoniots," J.Appl.Phys. 42:296-300 (1971).
(A quadratic fit to $U_s$ vs $u_p$ is used and complex pressure and complex compression are introduced.)

Huang, Y.K.
"Shock-Wave Behavior and Properties of Solids," J.Appl.Phys. 42:3212-15 (1971).
(Quadratic $U_s$-$u_p$ relation is used.)

Swan, G.W.
"A Theory for the Slope of the Shock-Wave Velocity Against Particle Velocity Curve," J.Phys.D:Appl.Phys. 4:1077-82 (1971). -Wash.St.U.-

2. Similarity Solutions

Hunter, S.C.
Crozier, R.J.M. "Similarity Solution for the Rapid Uniform Expansion of a Spherical Cavity in a Compressible Elastic-Plastic Solid," Quart.J.Appl.Math. XXI(4):467-486 (1968).

Zabaoakhin, E.I. "Shock Waves in Layered Systems," Soviet Physics-JETP 22:446-8 (1968). (Periodic self-similarity.)

Taulbee, D.B.
Cozzarelli, F.A.
Dym, C.L. "Similarity Solutions to Some Nonlinear Impact Problems," Int.J.Non-Linear Mech. 6:27-43 (1971).

For background on similarity solutions, see:

Sedov, L.I. Similarity and Dimensional Methods in Mechanics (Academic Press, N.Y., 1959).

C. Computer Codes

A basic background in finite difference methods is given in:

R.D. Richtmyer & K.W. Morton, Difference Methods for Initial-Value Problems, Second Edition (Wiley, N.Y., 1967) 405pp.

A useful basic one- or two-space dimension Lagrangian finite-difference computer program can be readily written from the equations given by Wilkins (p. 24). To such a basic program one can add features needed for particular problems. Some typical features are:

1) Automatic initial zoning to save labor when the problem is being set up.
2) Automatic rezoning to allow most of the computational effort to be concentrated in the region of interest.
3) Slips lines (for 2-D flow) along which materials can slide along each other.
4) Capability for creating internal voids (spalls) in accordance with criteria based on tensile stress and strain rate.
5) Equations of state can require considerable experimental and theoretical effort. Phase changes, melting, vaporization, and work-hardening, for example, can be important. Part III of this report lists some sources of theoretical and experimental information on equations of state.

1. PUFF

Barrett, W.H. "An Investigation of a Mixed-Phase Equation of State for the PUFF 66 Computer Code," AFIT Master's Thesis, GNE/PH/71-1, 118pp, AD726992, Jun 1971.

2. WONDY


Herrmann, W.
Holzhauser, P.
Thompson, R.J.
"WONDY - A Computer Program for Calculating Problems of Motion in One Dimension," Sandia Corp. SC-RR-66-601, 140pp, Feb 1967.

Herrmann, W.
Lawrence, R.J.
Mason, D.S.
"Strain Hardening and Strain Rate in One-Dimensional Wave Propagation Calculations," Sandia Labs. SC-RR-70-471, 115pp, Nov 1970. (A subroutine for WONDY is included.)

Butcher, B.M.
"Numerical Techniques for One-Dimensional Rate-Dependent Porous Material Compaction Calculations," Sandia Labs. SC-RR-710112, 61pp, Apr 1971. (Subroutine for WONDY code.)

Bakken, L.H.
Anderson, P.D.
"An Equation-of-State Handbook (Conversion Relations Between the WONDY/TOODY and the PUFF/KO/HEMP Classes of Shock Wave Propagation Computer Codes," Sandia Labs. SCL-DR-68-123, 54pp, Jan 1969. (Includes tables of data for 40 materials.)

Erkman, J.O.
Edwards, D.J.
"Computer Code for Calculating One-Dimensional Flow," Naval Ordnance Laboratory NOLTR 68-160, AD681377, 11pp, Nov 1968. (Reports acquisition of WONDY code.)

3. TOODY

Thorne, B.J.
Herrmann, W.
"TOODY - A Computer Program for Calculating Problems of Motion in Two Dimensions,"
Sandia Labs. SC-RR-66-602, 166pp, Jul 1967.

Bertholf, L.D.
Benzley, S.E.
"TOODY II - A Computer Program for Two-Dimensional Wave Propagation," Sandia Labs. SC-RR-68-41, 262pp, Nov 1968.

Benzley, S.E.
Bertholf, L.D.
Clark, G.E.
"TOODY II-A, A Computer Program for Two Dimensional Wave Propagation," Sandia Labs. SC-DR-69-516, 153pp, Nov 1969.
(CDC 6600 FORTRAN version.)

Bertholf, L.D.
Karnes, C.H.
"Axisymmetric Elastic-Plastic Wave Propagation in 6061-T6 Aluminum Bars of Finite Length,"
J.Appl.Mech. 36:533-541 (1969). -Sandia-
(End-on impact of two identical aluminum bars is studied experimentally and calculated with the TOODY code.)

4. KO and HEMP

Wilkins, M.L.
"Calculation of Elastic-Plastic Flow," in B.Alder et al (eds.), Methods in Computational Physics, Volume 3, Fundamental Methods in Hydrodynamics
(Academic Press, N.Y., 1964) pp 211-263.
(A 1-D code and the 2-D HEMP code are described.)

Wilkins, M.L.
"Calculation of Elastic-Plastic Flow,"
Lawrence Radiation Lab. UCRL-7322, Rev. 1, 97pp, Jan 1969.

Wilkins, M.L.
"Finite Difference Scheme for Calculating Problems in Two Space Dimensions and Time,"
J.Comput.Phys. 5:406-414 (1970). -LRL-

Giroux, E.D.
"HEMP User's Manual,"
Lawrence Livermore Lab. UCRL-51079, 204pp, Jun 1971.

5. ELK

Christensen, D. "ELK 40: Prediction Calculations of Ground Motion for Distant Plain, Event 6," Physics International Co., DASA-2471, AD707802, 89pp, Dec 1969. (ELK code calculations of cratering from 100-ton TNT sphere tangent to ground surface.)

Maxwell, D.E.
Moises, H. "Hypervelocity Impact Cratering Calculations," Physics International Co., NASA-CR-115350, N72-16248, 213pp, Jan 1971. (ELK calcs., basalt, soil.)

6. SOC

Butkovich, T.R. "Calculation of the Shock Wave from an Underground Nuclear Explosion in Granite," J.Geophys.Res. 70:885-892 (1965). -LRL- (New SOC computer code is used.)

Holzer, F. "Measurements and Calculations of Peak Shock-Wave Parameters from Underground Nucler Detonations," J.Geophys.Res. 70:893-905 (1965). -LRL- (Results from several explosions are given. The calculations use the SOC code.)

7. TENSOR

Maenchen, G.
Sack, S. "The TENSOR Code," in B.Alder et al (eds.), Methods in Computational Physics, Vol. 3, Fundamental Methods in Hydrodynamics (Academic Press, N.Y., 1964) pp 181-210. (Computer program for 2-D elastic-plastic flow.)

8. MCDIT

Burns, B.P. "MCDIT 1. A Computer Code for One-Dimensional Impact Problems," Drexel Inst. Tech. Report No. 125-11, AD665815, 36pp, Dec 1967. (Method of characteristics).

Shen, S.
Chou, P.C. "A Method of Characteristics Code for Energy Deposition Calculations (MCDIT 3)," Drexel U., Drexel-125-15, BRL-CR-36, AD724734, 97pp, Mar 1971.

9. HELP

Hageman, L.J.
Walsh, J.M. "HELP, A Multi-Material Eulerian Program for Compressible Fluid and Elastic-Plastic Flows in Two Space Dimensions and Time, Volume I," Systems Science & Software 3SR-350-Vol. 1, BRL-CR-39-Vol. 1, AD726459, 145pp, May 1971.

Hageman, L.J.
Walsh, J.M. "...Volume II. FORTRAN Listing of HELP," Systems Science & Software 3SR-350-Vol. 2, BRL-CR-39-Vol. 2, AD726460, 122pp, May 1971.

Hageman, L.J.
Walsh, J.M. "HELP Code Solutions to Two Test Problems in Armor Penetration," Systems Science & Software 3SR-201, BRL-CR-37, AD725998, 165pp, May 1971.

10. Electron deposition (for initial-condition calculations for impulsive electron-beam loading of solids)

Berger, M.J. "Monte Carlo Calculation of the Penetration and Diffusion of Fast Charged Particles," in B.Alder, et al (eds.), Methods in Computational Physics, Vol. 1, Statistical Physics (Academic Press, N.Y., 1963) pp 135-215. (Basis of the ZEBRA code.)

Buxton, L.D. "The Electron Transport Computer Code ZEBRA 1," Harry Diamond Labs. HDL-TR-1536, 21pp, Jun 1971.

11. Various codes


Herrmann, W.
Jones, A.H.
Percy, J.H.
"The Inclusion of Material Strength in Hydrodynamic Calculations," MIT, AFSWC-TDR-63-12, AD410386, 91pp, Apr 1963.

Herrmann, W.
"A Lagrangian Finite Difference Method for Two-Dimensional Motion Including Material Strength," AFWL-TR-64-107, AD609523, 107pp, Nov 1964.

Mader, C.L.
"One-Dimensional Elastic-Plastic Calculations for Aluminum," Los Alamos Sci. Lab. LA-3678, Feb 1967.

Mader, C.L.
Gage, W.R.
"FORTRAN SIN - A One-Dimensional Hydrodynamic Code for Problems Which Include Chemical Reactions, Elastic-Plastic Flow, Spalling, and Phase Transitions," Los Alamos Sci.Lab. LA-3720, May 1967.

Petschek, A.G.
Hanson, M.E.
"Difference Equations for Two-Dimensional Plastic Flow," J.Comput.Phys. 3:307-321 (1968). (TEMS code.)

Johnson, J.N.
Band, W.
"Investigation of Precursor Decay in Iron by the Artificial Viscosity Method," J.Appl.Phys. 38:1578-85 (1967). -WSU-

Barker, L.M.
"SWAP-9: An Improved Stress Wave Analyzing Program," Sandia Labs. SC-RR-69-233, 181pp, Aug 1969. (Uses method of characteristics.)

Barr, G.W.
Young, E.G.
"MAT2D: A Plane-Stress Material Model for an Elastic-Plastic Anisotropic Strain-Hardening Material," Sandia Labs. SC-RR-69-656, 74pp, Jan 1970. (Model consists of elastic-perfectly plastic elements arranged in parallel.)

Butcher, B.M.
"A Computer Program, SRATE, for the Study of Strain-Rate Sensitive Stress Wave Propagation. Part I," Sandia Corp. SC-RR-65-208, 54pp, Sep 1966. (Method of characteristics.)

Erkman, J.O.
"Explosively Induced Nonuniform Oblique Shocks," Phys.Fluids 1:535-540 (1958). (Method of characteristics for Al and Cu.)

Holzer, F.
"Calculation of Seismic Source Mechanisms," Proc.Roy.Soc. A290:408-429 (1966). (One-dimensional computer code calculations of underground nuclear detonations.)

11. Various codes (cont'd)


Riney, T.D. "Theoretical Hypervelocity Impact Calculations Using the PICWICK Code," GE Space Sci. Lab. R64SD13, Reprint No. 245, 73pp, Feb 1964.

Dienes, J.K. "The Theory of Hypervelocity Impact," General Dynamics, San Diego, GA-6509, Annual Status Report, AD617540, 124pp, Jun 1965. (Mainly on code development.)

Cannon, E.T. "Theoretical and Experimental Study of Low-Velocity Penetration Phenomena," Utah Res. & Dev. Co. (for ARPA), AD646457, 152pp, Aug 1966. (PIF code with no grid.)

Kreyenhagen, K.N.<br>Wagner, M.H.<br>Piechocki, J.J.<br>Bjork, R.L. "Ballistic Limit Determination in Impacts on Multi-material Laminated Targets," AIAA J. 8:2147-51 (1970). (Two-dimensional elastic-plastic calculations with the SHAPE code.) -SHI-

Rosenblatt, M. "Numerical Calculations of Hypervelocity Impact Crater Formation in Hard and Soft Aluminum Alloys," Shock Hydrodynamics, Inc., AFML-TR-70-254, AD721468, Feb 1971. (Eulerian 2-D STEEP code calculations for 4 and 7 km/sec Al spheres onto 1100-0 and 7075-T6 Al alloys.)

11. Various codes (cont'd)


Rosenblatt, M.
Piechocki, J.J.
"Cratering and Surface Waves Caused by Detonation of a Small Explosive in Aluminum,"
Shock Hydrodynamics, Inc. SH-6135-MC, DASA-2495, AD708734, 78pp, Apr 1970. (SHEP calculations.)

Costantino, C.J.
"Stress Waves in Layered Arbitrary Media. SLAM Code Free-Field Study, Vol. I,"
IIT Res.Inst., SAMSO-TR-68-181-Vol. I, AD840134, 211pp, Jul 1968.
"... Vol. I, Appendix," AD840135, 424pp, Jul 1968.
"... Vol. II. Computer Program Description of Nonlinear SLAM Code," AD840136, 419pp, Jul 1968.

Wachowski, A.
"... Vol. III. SLAM Code (Version 3) and VISA Modifications," AD840137, 233pp, Jul 1968.
(Response of buried structures to nuclear attack.)

Colland, R.W.
Reingold, E.M.
Robinson, R.R.
Wachowski, A.
"... Vol. IV. Auxiliary Programs,"
AD840138, 273pp, Jul 1968.

Ang, A.H.-S.
Rainer, J.H.
"Digital Calculation of Axisymmetric Elastic-Plastic Ground Motions from Nuclear Bursts, U. Illinois, AFWL-TR-65-115, AD475498, 226pp, Nov 1965.

Sameh, A.H.
"A Discrete-Variable Approach for Elastic-Plastic Wave Motions in Layered Solids,"
J.Comput.Phys. 8:343-368 (1971). U.Ill.

11. Various codes (cont'd)


Garg, S.K. — "Wave Propagation Effects in a Fluid-Saturated Porous Solid," J.Geophys.Res. 76:7947-62 (1971). -SSS- (TINC code is used; finite difference equations are given.)

Dienes, J.K. — "An Eulerian Method for Calculating Strength Dependent Deformation. Part One. A Derivation for the Flow Equations for Strength Dependent Deformation," Gulf General Atomic GAMD-8497 Pt One, AD678565, 16pp, Feb 1968.

Walsh, J.M.; Evans, M.W.; Dienes, J.K. — "... Part Two. Description of the Finite Difference Equations," Gulf General Atomic GAMD-8497 Pt 2, AD678566, 31pp, Feb 1968.

Dienes, J.K.; Evans, M.W.; Hageman, L. — "... Part Three. The FORTRAN IV Program and Instructions for Its Use," Gulf General Atomic GAMD-8497 Pt 3, AD678567, 169pp, Feb 1968.

Dienes, J.K.; Hageman, L. — "... Addendum to Report on the OIL-RPM Computer Code," Gulf General Atomic GAMD-8497 Add., AD678568, 29pp, Feb 1968.

Thorne, B.J.; Dahlgren, D.A. — "A Comparison of Numerical Techniques for Wave Propagation Problems in Solids," Sandia Labs. SC-RR-70-571, 211pp, Nov 1971. (The Lax-Wendroff 2-step method, the Richtmyer-von Neumann, the Godunov, and the Walsh implicit methods are compared on seven 1-D test problems.)

Riney, T.D. — "Behavior of Metals During Hyper Velocity Impact Cratering," in S. Ostrach and R.H. Scanlan, Developments in Mechanics, Volume 2, Part 2, Solid Mechanics, Proc. Eighth Midwestern Mechanics Conference, Case Inst.Tech., Apr. 1963 (Pergamon, N.Y., 1965) pp 419-445. (PICWICK code; based on PIC.)

Rosenblatt, M.; Kreyenhagen, K. — "Analytical Study of Debris Clouds Formed by Hypervelocity Impacts on Thin Plates," Shock Hydrodynamics, Inc., AFML-TR-68-266, 146pp, AD683055, Dec 1968. (2-D Eulerian STEEP code; spherical projectiles.)

Walsh, J.M. et al — "Summary Report on the Theory of Hypervelocity Impact," General Atomic GA-5119, AD436251, 66pp, Mar 1964. (Continuous Eulerian code is used.)

D. Special Configurations and Effects
1. Bars


Chree, C. — "The Equations of an Isotropic Elastic Solid in Polar and Cylindrical Co-ordinates, their Solution and Application," Trans.Camb.Phil.Soc. XIV:250-369 (1883).

Hopkinson, B. — "A Method of Measuring the Pressure Produced in the Detonation of High Explosives or by the Impact of Bullets," Phil.Trans.Roy.Soc. A213:437-456 (1914). (Introduction of the Hopkinson pressure bar.)

Landon, J.W.; Quinney, H. — "Experiments with the Hopkinson Pressure Bar," Proc.Roy.Soc. 103:622-643 (1923).

Donnell, L.H. — "Longitudinal Wave Transmission and Impact," Trans.Am. Soc.Engrs. 52:153-167 (1930). (Theory) -U.Mich.-

Bancroft, D. — "The Velocity of Longitudinal Waves in Cylindrical Bars," Phys.Rev. 59:588-593 (1941). (Theory.)

DeJuhasz, K.J. — "Graphical Analysis of Impact of Elastic Bars," J.Appl.Mech. 9:A122-8 (1942).

Taylor, G.I. — "The Plastic Wave in a Wire Extended by an Impact Load," British Official Report RC329, 1942. Reproduced in: G.K. Batchelor (ed.), The Scientific Papers of Sir G.I. Taylor, Vol. 1 (Cambridge U. Press, 1958) pp 467-479.

Pipes, L.A. — "The Operational Theory of Longitudinal Impact," J.Appl.Phys. 13:503-511 (1942).

Hudson, G.E. — "Dispersion of Elastic Waves in Solid Circular Cylinders," Phys.Rev. 63:46-51 (1943). -Brown U.-

Bruckner, R.E. — "Graphical Analysis of Impact of Elastic Bars," J.Appl.Mech. 10:A-111-114 (1943).

Fehr, R.O.; Parker, E.R.; DeMicheal, D.J. — "Measurement of Dynamic Stress and Strain in Tensile Test Specimens," J.Appl.Mech. 11:A65-A71 (1944).

Duwez, P.E.; Clark, D.S. — "An Experimental Study of the Propagation of Plastic Deformation Under Conditions of Longitudinal Impact," Proc.Am.Soc.Testing Mtrls. 47:502-532 (1947).

White, M.P.; Griffis, L. — "The Permanent Strain in a Uniform Bar Due to Longitudinal Impact," J.Appl.Mech. 14:A337-A343 (1947).

Davies, R.M. — "A Critical Study of the Hopkinson Pressure Bar," Phil.Trans.Roy.Soc. A240:375-457 (1948). -U.Camb.- (Experiment and theory.)

1. Bars (cont'd)


DeJuhasz, K.J. "Graphical Analysis of Impact of Bars Stressed Above the Elastic Range," J.Franklin Inst. 248:15-48 & 113-142 (1949).

Hughes, D.S.
Pondrom, W.L.
Mims, R.L. "Transmission of Elastic Pulses in Metal Rods," Phys.Rev. 75:1552-6 (1949). -U.Texas- (Transmission time measurements; steel, aluminum, brass, lucite. Single input pulse gives several pulses at the other end of the rod.)

Kármán, T.von
Duwez, P. "The Propagation of Plastic Deformation in Solids," J.Appl.Phys. 21:987-994 (1950). (Longitudinal impact at end of cylindrical bar.)

Malvern, L.E. "Plastic Wave Propagation in a Bar of Material Exhibiting a Strain Rate Effect," Quart.Appl.Math. 8:405-411 (1951).

Malvern, L.E. "The Propagation of Longitudinal Waves of Plastic Deformation in a Bar of Material Exhibiting a Strain-Rate Effect," J.Appl.Mech. 18:203-8 (1951).

Campbell, J.D. "An Investigation of the Plastic Behaviour of Metal Rods Subjected to Longitudinal Impact," J.Mech.Phys.Solids 1:113-123 (1953).

Rubin, R.J. "Propagation of Longitudinal Deformation Waves in a Prestressed Rod of Material Exhibiting a Strain-Rate Effect," J.Appl.Phys. 25:528-536 (1954).

Kolsky, H. "The Propagation of Longitudinal Elastic Waves Along Cylindrical Bars," Phil.Mag. 45:712-726 (1954). (Theory and experiments.)

Curtis, C.W. "Second Mode Vibrations of the Pochhammer-Chree Frequency Equation," J.Appl.Phys. 25:928 (1954). (Experiments with step pressure on bar end.)

Tu, L.Y.
Brennan, J.N.
Sauer, J.A. "Dispersion of Ultrasonic Pulse Velocity in Cylindrical Rods," J.Acoust.Soc.Am. 27:550-5 (1955). (Experiments.)

Davies, R.M. "Stress Waves in Solids," Brit.J.Appl.Phys. 7:203-9 (1956). (Mostly on Hopkinson's pressure bar.)

Miklowitz, J. "The Propagation of Compressional Waves in a Dispersive Elastic Rod. Part I—Results From the Theory," J.Appl.Mech. 24:231-9 (1957). (Mindlin-Herrmann theory.)

Skalak, R. "Longitudinal Impact of a Semi-Infinite Circular Elastic Bar," J.Appl.Mech. 24:59-64 (1957). -Columbia U.- (Linear elasticity and double-integral transforms.)

1. Bars (cont'd)


Miklowitz, J.
Nisewanger, C.R.
"The Propagation of Compressional Waves in a Dispersive Elastic Rod. Part II--Experimental Results and Comparison with Theory," J.Appl.Mech. 24:240-4 (1957).
(300 psi step applied to 24S-T Al alloy rod.)

Folk, R.
Fox, G.
Shook, C.A.
Curtis, C.W.
"Elastic Strain Produced by Sudden Application of Pressure to One End of a Cylindrical Bar. I. Theory," J.Acoust.Soc.Am. 30:552-8 (1958). -Lehigh U.-
(Double transform calculation.)

Fox, G.
Curtis, C.W.
"Elastic Strain Produced by Sudden Application of Pressure to One End of a Cylindrical Bar. II. Experimental Observations," J.Acoust.Soc.Am. 30:559-563 (1958).
(Magnesium bar loaded with about 45 psi.)

Chadwick, P.
"On the Propagation of Thermoelastic Disturbances in Thin Plates and Rods," J.Mech.Phys.Solids 10:99-109 (1962).

Miklowitz, J.
"Transient Wave Propagation in Elastic Rods and Plates," J.Geophys.Res. 68:1190-2 (1963). -CIT-

Kaul, R.K.
McCoy, J.J.
"Propagation of Axisymmetric Waves in a Circular Semi-infinite Elastic Rod," J.Acoust.Soc.Am. 36:653-660 (1954).
(Uses Mindlin-McNiven approx. to Pochhammer's theory.)

Lubliner, J.
"A Generalized Theory of Strain-Rate-Dependent Plastic Wave Propagation in Bars,"
J.Mech.Phys.Solids 12:59-65 (1964).

Arenz, R.J.
"Uniaxial Wave Propagation in Realistic Viscoelastic Materials," J.Appl.Mech. 31:17-21 (1964).
(Rod with step load on end; extension of Schapery collocation inversion method to dynamic cases.)

Konstantinov, G.G.
Marchenko, L.L.
Shkhinek, K.N.
"Wave Propagation in a Finite Elastoplastic Bar with Longitudinal Impact," Combustion, Explosion and Shock Waves 1(4):39-42 (1965).

Lindholm, U.S.
Doshi, K.D.
"Wave Propagation in an Elastic Nonhomogeneous Bar of Finite Length," J.Appl.Mech., Mar 1965, 135-142. -SWRI-
(Continuously varying modulus of elasticity.)

Clifton, R.J.
Bodner, S.R.
"An Analysis of Longitudinal Elastic-Plastic Pulse Propagation," J.Appl.Mech. 33:248-255 (1966).
(Long uniform bar loaded by short pulse at end.)

Penner, S.S.
Sharma, O.P.
"Interaction of Laser Radiation with an Absorbing Semi-Infinite Solid Bar," J.Appl.Phys. 37:2304-8 (1966).

1. Bars (cont'd)


Payton, R.G. "Elastic Wave Propagation in a Non-Homogeneous Rod," Quart.J.Mech.Appl.Math. XIX:83-91 (1966). -Adelphi U.- (A pressure step is applied to the end of a rod with propagation speed varying along the rod.)

Bertholf, L.D. "Numerical Solution for Two-Dimensional Elastic Wave Propagation in Finite Bars," J.Appl.Mech. 34:725-734 (1967). (Finite-difference solution; end-loaded bar.)

Reddy, D.P.
Achenbach, J.D. "Simple Waves and Shock Waves in a Thin Prestressed Elastic Rod," Z.A.M.P. 19:473-485 (1968).

Gilbert, I.H.
Mollow, B.R. "Momentum of Longitudinal Elastic Vibrations," Am.J.Phys. 36:822-5 (1968). -Brandeis U.-

Bertholf, L.D.
Karnes, C.H. "Axisymmetric Elastic-Plastic Wave Propagation in 6061-T6 Aluminum Bars of Finite Length," J.Appl.Mech. 36:533-541 (1969). -Sandia- (End-on impact of two identical aluminum bars is studied experimentally and calculated with the TOODY code.)

Kennedy, L.W.
Jones, O.E. "Longitudinal Wave Propagation in a Circular Bar Loaded Suddenly by a Radially Distrbuted End Stress," J.Appl.Mech. 36:470-478 (1969). -Sandia-

Wood, E.R.
Liu, T.H. "Dynamic Plastic Response of Finite Bars," AIAA J. 7:2158-60 (1969). -Ga.IT-

Habberstad, J.L. "Axisymmetric Elastic Wave Propagation in Bars Containing a Discontinuity," Wash.St.U. WSU-SDL-70-04, AD716547, 215pp, Sep 1970.

Broer, L.J.F. "Longitudinal Motion of an Elastic Bar," J.Eng.Math. 4:1-7 (1970).

Ting, T.C.T. "On the Initial Speed of Elastic-Plastic Boundaries in Longitudinal Wave Propagation in a Rod," J.Appl.Mech. 38:441-7 (1971).

Tuschak, P.A.
Schultz, A.B. "Determination of the Unloading Boundary in Longitudinal Elastic-Plastic Stress Wave Propagation," J.Appl.Mech. 38:888-894 (1971). (Waves in a rod.)

2. Laminated Media


White, J.E.
Angona, F.A. "Elastic Wave Velocities in Laminated Media," J.Acoust.Soc.Am. 27:310-7 (1955).

Postma, G.W. "Wave Propagation in a Stratified Medium," Geophysics XX:780-806 (1955). (A periodic stack of plates is replaced by a homogeneous material; the elastic moduli of this material are expressed in terms of the properties of the plates.)

Abramovici, F.
Alterman, Z. "Computations Pertaining to the Problem of Propagation of a Seismic Pulse in a Layered Solids," in B.Alder, et al (eds.), Methods in Computational Physics, Volume 4, Applications in Hydrodynamics (Academic Press, N.Y., 1965) pp 349-379.

Behrens, E. "Sound Propagation in Lamellar Composite Materials and Averaged Elastic Constants," J.Acoust.Soc.Am. 42:378-383 (1967).

Achenbach, J.D. "Wave Propagation in Lamellar Composite Materials," J.Acoust.Soc.Am. 43:1451-2 (1968).

Sun, C.-T.
Achenbach, J.D.
Herrmann, G. "Continuum Theory for a Laminated Medium," J.Appl.Mech. 35:467-475 (1968).

Achenbach, J.D.
Sun, C.-T.
Herrmann, G. "On the Vibrations of a Laminated Body," J.Appl.Mech. 35:689-696 (1968). -NWU- (Continuum theory for laminated medium.)

Alterman, Z.
Karal, F.C.,Jr. "Propagation of Elastic Waves in Layered Media by Finite Difference Methods," Bull.Seismol.Soc.Am. 58:367-398 (1968). (Applied to buried point source emitting a compression pulse. For waves from earthquakes.)

Sun, C.-T.
Achenbach, J.D.
Herrmann, G. "Time-Harmonic Waves in a Stratified Medium Propagating in the Direction of the Layering," J.Appl.Mech. 35:408-411 (1968). -NWU-

Whittier, J.S.
Peck, J.C. "Experiments on Dispersive Pulse Propagation in Laminated Composites and Comparison with Theory," Aerospace Corp. SAMSO-TR-69-102, 33pp, AD685712, Feb 1969. Published in J.Appl.Mech. 36:485-490 (1969). (Alternating layers of low and high modulus material.)

Peck, J.C.
Gurtman, G.A. "Dispersive Pulse Propagation Parallel to the Interfaces of a Laminated Composite," J.Appl.Mech. 36:479-484 (1969).

2. Laminated Media (cont'd)


Jones, J.P. "Pulse Propagation in a Laminated Medium," Aerospace Corp., SAMSO-TR-70-217, 25pp, AD708464, Jun 1970. (Stress wave attenuation in composites composed of alternate layers of two materials.)

Sve, C. "Thermoelastic Waves in a Periodically Laminated Medium," Aerospace Corp., SAMSO-TR-70-417, 33pp, AD715895, Oct 1970. (Oblique propagation of time-harmonic waves.)

Lundergan, C.D.
Drumheller, D.S. "Propagation of Stress Waves in a Laminated Plate Composite," J.Appl.Phys. 42:669-675 (1971). (Gas gun experiments; plates of Epon and steel.)

Munson, D.E.
Schuler, K.W. "Steady Wave Analysis of Wave Propagation in Laminates and Mechanical Mixtures," J.Composite Materials 5:286-304 (1971).

Barker, L.M. "A Model for Stress Wave Propagation in Composite Materials," J.Compos.Mtrls. 5:140-162 (1971). (Plate-laminate composites.)

Lundergan, C.D. "Discussion of the Transmitted Waveforms in a Periodic Laminated Composite," J.Appl.Phys. 42:4148-55 (1971). (Experiments with Epon 828 plus steel laminate and calculations with WONDY III.)

Spielvogel, L.Q. "Plane Waves in Layered Media," J.Appl.Phys. 42:3667-9 (1971).

Richards, P.G. "Elastic Wave Solutions in Stratified Media," Geophysics 36:798-809 (1971).

Anfinsen, L.E. "Optimum Design of Layered Elastic Stress Wave Attenuators," J.Appl.Mech. 34:751-5 (1967). -IITRI-

Mishra, S.K. "Propagation of Sound Pulses in a Semi-Infinite Stratified Medium," Proc.Indian Acad.Sci. LIX, Section A: 21-48 (1964).

Zababakhin, E.I. "Shock Waves in Layered Systems," Soviet Physics-JETP 22:446-8 (1966). (Periodic self-similarity.)

3. Composite Media


Sternberg, J.E.
Chakravorty, J.G.
"On the Propagation of Shock Waves in a Nonhomogeneous Elastic Medium," J.Appl.Math. 26:528-536 (1959).

Hashin, Z.
"Theory of Mechanical Behavior of Heterogeneous Media," Appl.Mech.Rev. 17:1-9 (1964). -U.Penn.- (Survey paper.)

Hashin, Z.
Rosen, B.W.
"The Elastic Moduli of Fiber-Reinforced Materials," J.Appl.Mech. 31:223-232 (1964). -U.Penn.-
(Exact results for hexagonal arrays; approximate results for random arrays.)

Lighthill, M.J.
"Contributions to the Theory of Waves in Non-Linear Dispersive Systems," J.Inst.Maths.Applics. 1:269-306 (1965).

Abbott, B.W.
Broutman, L.J.
"Stress-Wave Propagation in Composite Materials," Experimental Mechanics 6(6):383-4 (1966).
(Experiments on longitudinal propagation in filament-reinforced composites.)

Whitney, J.M.
Riley, M.B.
"Elastic Properties of Fiber Reinforced Composite Materials," AIAA J. 4:1537-42 (1966). -AFML-
(Approximate equations are derived for getting the elastic constants from constituent material data.)

Mulhern, J.F.
Rogers, T.G.
Spencer, A.J.M.
"Cyclic Extension of an Elastic Fibre with an Elastic-Plastic Coating," J.Inst.Maths.Applics. 3:21-40 (1967).

Achenbach, J.D.
"Longitudinal Force on an Embedded Filament," Appl.Sci.Res. 19:412-425 (1968). -NWU-
(Dynamic loading.)

Achenbach, J.D.
Herrmann, G.
"Dispersion of Free Harmonic Waves in Fiber-Reinforced Composites," AIAA J. 6:1832-6 (1968). -NWU-
("A set of displacement equations of motion is proposed...")

Ben-Amoz, M.
"A Continuum Approach to the Theory of Elastic Waves in Heterogeneous Materials," Int.J.Engg.Sci. 6:209-218 (1968).

3. Composite Media (cont'd)


Chou, P.C. "Introduction to Wave Propagation in Composite Materials," Drexel Inst. Tech., AFML-TR-67-427, 37pp, AD672269, May 1968.

Sun, C.T.
Valanis, K.C.
Sierakowski, R.L. "The Extension of a Superposition Principle to Wave Propagation in Nonhomogeneous Elastic Media," J.Composite Materials 3:454-469 (1969).

Tsou, F.K.
Chou, P.C. "Analytical Study of Hugoniot in Unidirectional Fiber Reinforced Composites," J.Composite Materials 3:500-514 (1969).

Johnson, M.W.,Jr. "Analytical Procedures for Predicting the Mechanical Properties of Fiber Reinforced Composites," U.Wis. AFML-TR-65-220, part IV, AD686457, Apr 1969.

Ting, T.C.T.
Lee, E.H. "Wave-Front Analysis in Composite Materials," J.Appl.Mech. 36:497-504 (1969).

Mulhern, J.F.
et al "A Continuum Theory of a Plastic-Elastic Fiber-Reinforced Material," Int.J.Engng.Sci. 7:129-152 (1969).

Haener, J.
Puppo, A. "Further Investigations Into the Microdynamics of Wave Propagation," Whittaker Corp., AFML-TR-68-311-Pt 2, AD702108, Aug 1969. (Unidirectional fiber reinforced composites.)

Webster, L.D.
Larrabee, A.D. "Wave Propagation in Composite Materials. A Progress Report," Kaman Nuclear KN-70-760(R), 48pp, Nov 1970.

Webster, L.D. "The Method of Finite Elements Applied to Unidirectional Fiber Reinforced Composites," Kaman Nuclear KN-70-59(R), 45pp, Jan 1970.

Herrmann, G. "Dynamics of Composite Materials," in Recent Advances in Engineering Science, Volume 5 (Gordon & Breach, N.Y., 1970) pp 183-7.

3. Composite Media (cont'd)


Bedford, A.
Stern, M.
"On Wave Propagation in Fiber-Reinforced Visco-elastic Materials," J.Appl.Mech. 37:1190-2 (1970).

Haener, J.
"Viscoelastic Wave Propagation in Unidirectional Composites," Whittaker Corp., AFML-TR-68-311-Pt 3, AD717760, Sep 1970.

Hashin, Z.
"Complex Moduli of Viscoelastic Composites—I. General Theory and Application to Particulate Composites,"
Int.J.Solids Structures 6:539-552 (1970).

Hopkins, A.K.
"On the Response of Mixed Materials to One-Dimensional Shock Waves," Dayton U., AFIT Master's Thesis, AFML-TR-70-158, 117pp, AD712062, Jul 1970.
(Experimental study of Cu-polyethylene mixtures; 1-D small-bore powder gun impact at 0.5-2.5 km/sec.)

Torvik, P.J.
"Shock Propagation in a Composite Material,"
J.Composite Materials 4:296-309 (1970).
Also in AFIT-TR-69-7, AD690504, 25pp, Jun 1969.
(Garg & Kirsch, J.Composite Materials 5:439 (1971) find an error in Torvik's energy equation.)

Moon, F.C.
Mow, C.C.
"Wave Propagation in a Composite Material Containing Dispersed Rigid Spherical Inclusions,"
Rand Corp. RM-6139-PR, AD718087, 33pp, Dec 1970.

Tsou, F.K.
Holmes, B.S.
"Measurements of Shock Hugoniot in Unidirectional Fiber Reinforced Composites," Drexel Univ., 33pp, AFML-TR-69-152-Part 2, AD716560, Nov 1970.

Eason, G.
"Wave Propagation in Inhomogeneous Elastic Media; Normal Loading of Spherical and Cylindrical Surfaces,"
Appl.Sci.Res. 21:467-477 (1970). -U.Strathclyde-

3. Composite Media (cont'd)


Herrmann, G.
Achenbach, J.D. "Wave Propagation in Laminated and Fiber-Reinforced Composites," in Mechanics of Composite Materials, Proceedings of Fifth Symposium on Naval Structural Mechanics, Philadelphia, May 1967 (Pergamon, 1970).

Yeh, R.H.T. "Variational Bounds of the Elastic Moduli of Two-Phase Materials," J.Appl.Phys. 42:1101-3 (1971). (Bounds for Young's modulus agree with experiment on WC-Co alloy. Examples show usefulness for fiber-reinforced materials.)

Greszczuk, L.B. "Interfiber Stresses in Filamentary Composites," AIAA J. 9:1274-80 (1971). (Theory and experiment.)

Tauchert, T.R.
Moon, F.C. "Propagation of Stress Waves in Fiber-Reinforced Composite Rods," AIAA J. 9:1492-8 (1971). (Experimental; lead-pellet impact on end of rod.)

Tauchert, T.R. "Propagation of Stress Waves in Woven-Fabric Composites," J.Composite Materials 5:456-465 (1971). -U.Kent.- (Experiments.)

Ben-Amoz, M. "Propagation of Finite-Amplitude Waves in Unidirectionally Reinforced Composites," J.Appl.Phys. 42:5422-9 (1971). (Theory for waves moving in the direction of the fibers.)

Huang, W.C. "Plastic Behavior of Some Composite Materials," J.Composite Materials 5:320-338 (1971).

Bedford, A.
Stern, M. "Toward a Diffusing Continuum Theory of Composite Materials," J.Appl.Mech. 38:8-14 (1971).

Duvall, G.E.
Taylor, S.M.,Jr. "Shock Parameters in a Two Component Mixture," J.Composite Materials 5:130-9 (1971). (Polyethylene-quartz mixture is worked out.)

Davis, R.O.,Jr. "Composite Hugoniot Synthesis Using the Theory of Mixtures," J.Composite Materials 5: 78-490 (1971).

Davies, W.E.A. "The Elastic Constants of a Two-Phase Composite Material," J.Phys.D:Appl.Phys. 4:1176-81 (1971).

3. Composite Media (cont'd)

Garg, S.K.
Kirsch, J.W.
"Hugoniot Analysis of Composite Materials," J.Composite Materials 5:428-445 (1971). -SSS-
(Uses TINC: theory of interacting continua.)

Garg, S.K.
"Wave Propagation Effects in a Fluid-Saturated Porous Solid," J.Geophys.Res. 76:7947-62 (1971). -SSS-
(TINC code used; finite-difference eqns. are given.)

Riney, T.D.
Garg, S.K.
Kirsch, J.W.
et al
"Wave Propagation in Porous Geologic Composites," Systems Science and Software 3SR-648, DNA-27251, AD732023, 332pp, Jul 1971.
(TINC model is used for NTS tuff.)

Johnson, J.N.
"Shock Propagation Produced by Planar Impact in Linearly Elastic Anisotropic Media," J.Appl.Phys. 42:5522-30 (1971). -Sandia-
(Dissimilar anisotropic plates, each with arbitrary crystallographic orientation.)

Wu, T.M.
Moon, F.C.
"Propagation of Elastic Waves in Periodic Fiber Composite Materials," Princeton U. Report No. TR-27, ARGD-8090:5-E, AD731833, 196pp, May 1971.
(Galerkin method and micromechanics method; waves normal to filaments; dispersion curves confirmed experimentally.)

Pao, Y.-H.
"Some Recent Developments in Elastic Waves in Solids," Exp.Mech. 12:83-89 (1972). -Cornell U.-
(Fiber-reinforced composites; thermoelastic waves; magnetoelastic waves.)

Anderholm, N.C.
Boade, R.R.
"Laser-Induced Stress Waves in Quartz Phenolic," J.Appl.Phys. 43:434-6 (1972). -Sandia-
(Grüneisen paremeter of 0.22 found for 2-D phenolic.)

Anderson, G.L.
"Wave Propagation and Vibrations in Fiber-Reinforced Composites," Watervliet Arsenal WVT-7133, AD734295, 81pp, Jun 1971. (Unidirectional fibers treated as Euler-Bernoulli beams.)

Holmes, B.S.
Tsou, F.K.
"Steady Shock Waves in Composite Materials," J.Appl.Phys. 43:957-961 (1972).
(Flyer plate impact on Epoxy matrix with unidirectional Al fibers.)

Morland, L.W.
"A Simple Constitutive Theory for a Fluid-Saturated Porous Solid," J.Geophys.Res. 77:890-900 (1972). -SSS-
(Mixture theory with different velocity fields for the separate constituents; applied to saturated porous tuff.)

3. Composite Media (cont'd)


Biot, M.A. "Theory of Propagation of Elastic Waves in a Fluid-Saturated Porous Solid. I. Low-Frequency Range," J.Acoust.Soc.Am. 28:168-178 (1956).
"... II. Higher Frequency Range," J.Acoust.Soc.Am. 28:179-191 (1956).

Hill, R. "Elastic Properties of Reinforced Solids: Some Theoretical Principles," J.Mech.Phys.Solids 11:357-372 (1963). (Two bonded isotropic phases.)

Schiffman, R.L. "The Stress Components of a Porous Medium," J.Geophys.Res. 75:4035-8 (1970). -U.Colo.-

Mackenzie, J.K. "The Elastic Constants of a Solid Containing Spherical Holes," Proc.Phys.Soc. 63B:2-11 (1950).

Green, A.E.
Steel, T.R. "Constitutive Equations for Interacting Continua," Int.J.Engng Sci. 4:483-500 (1966). (Mixture of non-linear elastic solid and linear viscous fluid; mixture of two non-linear elastic solids.)

Steel, T.R. "Applications of a Theory of Interacting Continua," Quart.J.Mech.Appl.Math. XX:57-72 (1967). (Plane waves thru a mixture.)

Haener, J. "Viscoelastic Wave Propagation in Unidirectional Composites," Whittaker Corp., San Diego, AFML-TR-68-311-Part 4, AD734658, 37pp, May 1971. (Attenuation calculations.)

Knollman, G.C. "Wave Propagation in a Medium with Random, Spheroidal Inhomogeneities," J.Acoust.Soc.Am. 36:681-8 (1964). (Acoustic or electromagnetic waves.)

Anderholm, N.C.
Anderson, P.D. "Laser-Heating Studies of Composite Materials," J.Appl.Phys. 43:1820-5 (1972). -Sandia- (Carbon-methacrylate; carbon as particles; experiments and calculations with Mie-Grüneisen equation of state.)

Smith, R.E. "Ultrasonic Elastic Constants of Carbon Fibers and Their Composites," J.Appl.Phys. 43:2555-61 (1972).

Nevill, G.E.,Jr. et al "One-Dimensional Wave Pulses in Steel-Epoxy Composites," Exp.Mech. 12:278-282 (1972). -U.Fla.- (Air-gun impact experiments on long rods.)

4. Spalling


Erkman, J.O. — "Spalling of Aluminum and Copper," Poulter Labs., Stanford Res. Inst. TR 015-59, 28pp, AD229841, Oct 1959.

Erkman, J.O. — "Smooth Spalls and the Polymorphism of Iron," J.Appl.Phys. 32:939-944 (1961).

Erkman, J.O — "Decay of Explosively Induced Shock Waves in Solids and Spalling of Aluminum," Poulter Labs., Stanford Res. Inst. TR 008-60, 16pp, AD244108, Aug 1960.

Keller, D.V.; Trulio, J.G. — "Mechanism of Spall in Lucite," J.Appl.Phys. 34:172-5 (1963).

Butcher, B.M. et al — "Influence of Stress History on Time-Dependent Spall in Metals," AIAA J. 2(6):977-990 (1964). -Sandia-

Piacesi, R.; Watt, J.W. — "A Study of the Role of Mechanical-Strength Properties on the Phenomena of Spallation," Naval Ordnance Laboratory NOLTR 66-42, 22pp, Jan 1966.

Breed, B.R.; Mader, C.L.; Venable, D. — "Techniques for the Determination of Dynamic-Tensile-Strength Characteristics," J.Appl.Phys. 38:3271-5 (1967). -LASL-

Oscarson, J.H.; Graff, C.F. — "Spall Fracture and Dynamic Response of Materials," Battelle Memorial Inst. BAT-197A-4-3, 115pp, 63 refs, AD669440, Mar 1968. (Literature review.)

Nachbar, W. — "A Simplified Model for Thermal Shock and Spallation in Partially Transparent Elastic Materials Under Energetic Radiation," Calif. U., San Diego, Tech. Report No. 11, AFOSR 68-1552, AD675645, 35pp, May 1968.

Isbell, W.M.; Christman, D. — "Shock Propagation and Fracture in 6061-T6 Aluminum From Wave Profile Measurements," General Motors Technical Center, Warren, Mich. MSL-69-60, DASA-2419, AD705536, 38pp, Apr 1970.

4. Spalling (cont'd)


Chilton, F.
Eisler, J.D.
Heubach, H.G.
"Dynamics of Spalling of the Earth's Surface Caused by Underground Explosions," J.Geophys.Res. 71:5911-9 (1966). (Theory.)

Cohen, L.J.
Berkowitz, H.M.
"Time-Dependent Fracture Criteria for 6061-T6 Aluminum Under Stress-Wave Loading in Uniaxial Strain," Int.J.Fracture Mech. 7:183-196 (1971).

Davison, L.
Stevens, A.L.
"Continuum Measures of Spall Damage," J.Appl.Phys. 43:988-994 (1972).

Gusein-Zade, M.I.
"On the Acoustic Theory of Spalling," J.Math.Mech. (PMM) 22:763-7 (1958).

Steffan, K.L.
Holt, A.C.
"Calculated Spall Thresholds for Short Stress Pulses in 6061-T6 Aluminum," Lawrence Livermore Lab. UCRL-51246, 10pp, Jul 1972. (Rectangular stress pulse; Tuler-Butcher cumulative damage spall criterion; WONDY III code.)

Thurston, R.S.
Mudd, W.L.
"Spallation Criteria for Numerical Computations," Los Alamos Sci.Lab. LA-4013, 12pp, Sep 1968.

Tuler, F.R.
"Tensile Strain as a Criterion for Spallation in Metals," Effects Technology, Inc. CR-71-36, DASA 2740 T, 19pp, Aug 1971.

Tuler, F.R.
Butcher, B.M.
"A Criterion for the Time Dependence of Dynamic Fracture," Int.J.Fracture Mech. 4:431-7 (1968). -Sandia-

Woodruff, L.W.
Giedt, W.H.
Hesse, J.L.
"Surface Melting, Spallation, and Stresses Induced in Metals by Pulsed Electron Beam Heating," J.Appl.Mech. 38:363-370 (1971). -LRL-

## 5. Spherical Waves


Isenberg, J.
Bhaumik, A.K.
Wong, F.S.
"Spherical Waves in Inelastic Materials," Agbabian-Jacobsen Associates, AJA-R-6813-777, DASA-2404, AD703295, 57pp, Mar 1970. (Finite-element calculations.)

Blake, F.G.,Jr.
"Spherical Wave Propagation in Solid Media," J.Acoust.Soc.Am. 24:211-215 (1952).

Bland, D.R.
"Dilatational Waves and Shocks in Large Displacement Isentropic Dynamic Elasticity," J.Mech.Phys.Solids 12:245-267 (1964). (Includes numerical solution for spherical tensile explosion.)

Mehta, P.K.
Davids, N.
"A Direct Numerical Analysis Method for Cylindrical and Spherical Elastic Waves," AIAA J. 4:112-7 (1966). (See correction in AIAA J. 9:1887-8 (1971).)

Mok, C.H.
"The Dynamic Expansion of a Spherical Cavity in an Elastic-Perfectly Plastic Material," Ballistic Res. Labs. BRL-R-1357, AD654369, 18pp, Feb 1967.

Garg, S.K.
"Spherical Elastic-Plastic Waves," Z.A.M.P. 19:243-251 (1968). (Finite-difference calculations.)

Garg, S.K.
"Numerical Solutions for Spherical Elastic-Plastic Wave Propagation," Z.A.M.P. 19:778-787 (1968).

Mok, C.H.
"Effects of Solid Strength on the Propagation and Attenuation of Spherical and Plane Shock Waves," J.Appl.Phys. 39:2072-81 (1968). -BRL-

Garg, S.K.
"Spherical Elastic-Plastic Waves in Solid Media," Toronto U., UTIAS Tech.Note 132, AD690799, 37pp, Feb 1969.

Morland, L.W.
"Spherical Wave Propagation in Elastic-Plastic Work-Hardened Materials," J.Mech.Phys.Solids 17:371-385 (1969). -U.East Anglia-

5. Spherical Waves (cont'd)


Fowles, R. "Conservation Relations for Spherical and Cylindrical Stress Waves," J.Appl.Phys. 41:2740-1 (1970). -Physics Int'l-

Garg, S.K. "Spherical Elastic-Plastic Waves in Solid Media," Toronto U., ARL-70-0072, AD709369, 44pp, Apr 1970.

Mehta, P.K.
Davids, N.
Patel, N.T. "Comment on 'A Direct Numerical Analysis Method for Cylindrical and Spherical Blast Waves'," AIAA J. 9:1887-8 (1971). (Corrections to previous article, AIAA J. 4:112-7 (1966).)

Hunter, S.C.
Crozier, R.J.M. "Similarity Solution for the Rapid Uniform Expansion of a Spherical Cavity in a Compressible Elastic-Plastic Solid," Quart.J.Mech.Appl.Math. XXI(4):467-486 (1968).

Chadwick, P. "Propagation of Spherical Plastic-Elastic Disturbances From an Expanded Cavity," Quart.J.Mech.Appl.Math. XV:349-376 (1962).

Morland, L.W. "The Unloading Problem for Spherical Elastic-Plastic Waves of Small Amplitude," J.Mech.Phys.Solids 19:295-309 (1970). ("This paper presents a closed-form solution for a uniform pressure applied instantaneously and smoothly released on the surface of a spherical cavity in an infinite elastic-plastic medium.")

Eason, G. "Propagation of Waves From Spherical and Cylindrical Cavities," Z.A.M.P. 14:12-23 (1963).

Sharpe, J.A. "The Production of Elastic Waves by Explosion Pressures. I. Theory and Empirical Field Observations," Geophysica 7:144-154 (1942). (Pressure on inside of spherical cavity.)

Meyer, M.L. "On Spherical Near Fields and Far Fields in Elastic and Visco-Elastic Solids," J.Mech.Phys.Solids 12:77-111 (1964). -U.Sheffield-

Selberg, H.L. "Transient Compression Waves from Spherical and Cylindrical Cavities," Arkiv för Fysik 5(7):97-108 (1952).

E. Experimental Methods
1. Reviews


Bridgman, P.W. — The Physics of High Pressure (G. Bell & Sons, 1931; Dover reprint 1970.)

Swenson, C.A. — "Physics at High Pressure," pp 41-147 of F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Vol. 11 (Academic Press, N.Y., 1960).

Bundy, F.P.
Strong, H.M. — "Behavior of Metals at High Temperatures and Pressures," pp 81-146 of F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Vol. 13 (Academic Press, N.Y., 1962).

McQueen, R.G. — "Laboratory Techniques for Very High Pressures and the Behavior of Metals Under Dynamic Loading," in K.A. Gschneidner, Jr., M.T. Hepworth, and N.A.D. Parlee (eds.), Metallurgy at High Pressures and High Temperatures (Gordon & Breach, N.Y., 1964) pp 44-132.

Austin, I.G. — "Solids Under Very High Pressure," Contemp.Phys. 7: 174-191 (1966). -U.Sheffield-
(Review of experimental techniques and some results.)

Rinehart, J.S.
Pearson, J. — Behavior of Metals Under Impulsive Loads (American Soc. for Metals, Cleveland, 1954; reprinted by Dover).

Kolsky, H. — "Experimental Wave-Propagation in Solids," in Structural Mechanics, Proceedings of the First Symposium on Naval Structural Mechanics, Stanford U., Aug 1958 (Pergamon, N.Y., 1960) pp 233-262.

Shewmon, P.G.
Zackay, V.F.
(eds.) — Response of Metals to High Velocity Deformation (Interscience, N.Y., 1961). Metallurgical Society Conference, Estes Park, Colo., July 11-12, 1960.

Kolsky, H. — Stress Waves in Solids (Clarendon, Oxford, 1953; reprinted by Dover).

Munro, D.C. — "Production and Measurement of High Pressures," in R.S. Bradley, High Pressure Physics and Chemistry, Volume 1 (Academic Press, N.Y., 1963) pp 11-49.

Kormer, S.B. — "Optical Study of the Characteristics of Shock-Compressed Condensed Dielectrics," Soviet Physics-Uspekhi 11:229-254 (1968).
(Review article; 178 refs.)

2. Ultrasonics


Huntington, H.B. "Ultrasonic Measurements on Single Crystals," Phys.Rev. 72:321-331 (1947). -MIT-

McSkimin, H.J. "Pulse Superposition Method for Measuring Ultrasonic Wave Velocities in Solids," J.Acoust.Soc.Am. 33:12-16 (1961). -Bell Tel.-

McSkimin, H.J. Andreatch, P. "Analysis of Pulse Superposition Method for Measuring Ultrasonic Wave Velocities as a Function of Temperature and Pressure," J.Acoust.Soc.Am. 34:609-615 (1962).

McSkimin, H.J. Andreatch, P.,Jr. "Measurement of Very Small Changes in the Velocity of Ultrasonic Waves in Solids," J.Acoust.Soc.Am. 41:1052-7 (1966).

Williams, J. Lamb, J. "On the Measurement of Ultrasonic Velocity in Solids," J.Acoust.Soc.Am. 30:308-313 (1958). (Cancellation of two waves from the same transducer.)

McSkimin, H.J. "Ultrasonic Methods for Measuring the Mechanical Properties of Liquids and Solids," in W.P. Mason (ed.), Physical Acoustics, Volume I-Part A (Academic Press, N.Y., 1964) pp 271-334.

McSkimin, H.J. "Ultrasonic Measurement Techniques Applicable to Small Solid Specimens," J.Acoust.Soc.Am. 22:413-8 (1950).

Heydemann, P. "Ultrasonic Measurements at Very High Pressures," in W.P. Mason & R.N. Thurston (eds.), Physical Acoustics, Volume VIII (Academic Press, N.Y., 1971) pp 203-236.


- - -

The references above are on experimental techniques. For theory, see Truell & Elbaum (p. 6). Applications are included in the "Equations of State" section of this bibliography. Thurston (p. 64) gives a tutorial paper on the use of ultrasonic velocity data in finding material properties.

3. Static Loading


Hall, H.T. "Some High-Pressure, High-Temperature Apparatus Design Considerations: Equipment for Use at 100 000 Atmospheres and 3000°C," Rev.Sci.Inst. 29:267-275 (1958).

Hall, H.T. "Ultra-High-Pressure, High-Temperature Apparatus: the 'Belt'," Rev.Sci.Inst. 31:125-131 (1960).

Boyd, F.R.
England, J.L. "Apparatus for Phase-Equilibrium Measurements at Pressures up to 50 Kilobars and Temperatures up to 1750°C," J.Geophys.Res. 65:741-8 (1960).

4. Dynamic Loading


Barker, L.M. — "Laser Interferometry in Shock-Wave Research," Exp.Mechanics 12:209-215 (1972). -Sandia- (Review article.)

Hawke, R.S. et al — "Method of Isentropically Compressing Materials to Several Megabars," J.Appl.Phys. 43:2734-41 (1972). (Magnetic flux compression of a tube. Loading occurs in about 10 microseconds but is slow enough to avoid shock formation.)

Balchan, A.S. Cowan, G.R. — "Method for Accelerating Flat Plates to High Velocity," Rev.Sci.Inst. 35:937-944 (1964). (Some velocity is gained by using a driver plate-low impedance plate-driven plate configuration.)

Fuller, P.J.A. Price, J.H. — "Dynamic Pressure Measurements to 300 Kilobars with a Resistance Transducer," Brit.J.Appl.Phys. 15:751-8 (1964). (Manganin is useful because of its very low temperature coefficient of resistance.)

Jones, O.E. Neilson, F.W. Benedick, W.B. — "Dynamic Yield Behavior of Explosively Loaded Metals Determined by a Quartz Transducer Technique," J.Appl.Phys. 33:3224-32 (1962). (Duraluminum, Armco iron, steels.)

Barker, L.M. Hollenbach, R.E. — "Interferometer Technique for Measuring the Dynamic Mechanical Properties of Materials," Rev.Sci.Inst. 36:1617-20 (1965).

Graham, R.A. Neilson, F.W. Benedick, W.B. — "Piezoelectric Current from Shock-Loaded Quartz--A Submicrosecond Stress Gauge," J.Appl.Phys. 36:1775-83 (1965). (A quartz disk is impacted by another quartz disk. Stresses up to 50 kbar are measured.)

Linde, R.K. — "Measuring the Submicrosecond Response of Shock Loaded Materials," Rev.Sci.Inst. 37:1-7 (1966). (Gas gun.)

Ahrens, T.J. Ruderman, M.H. — "Immersed-Foil Method for Measuring Shock Wave Profiles in Solids," J.Appl.Phys. 37:4758-65 (1966). -SRI- (Shock passes thru Mylar foil into transparent liquid.)

Fowles, G.R. Isbell, W.M. — "Method for Hugoniot Equation-of-State Measurements at Extreme Pressures," J.Appl.Phys. 36:1377-9 (1965). -SRI- (Uses mach stem in a conically convergent shock.)

4. Dynamic Loading (cont'd)

Schock, R.N.
Duba, A.G.
"Quasistatic Deformation of Solids with Pressure,"
J.Appl.Phys. 43:2204-10 (1972). -LLL-
(Loading to 5 kbar with fluid pressure rather than with a solid piston; results for Armco iron, Pyrex glass, PMMA, granite, and limestone.)

Lysne, P.C.
Boade, R.R.
"Determination of Release Adiabats and Recentered Hugoniot Curves by Shock Reverberation Techniques,"
J.Appl.Phys. 40:3786-95 (1969). -Sandia-

Barker, L.M.
Hollenbach, R.E.
"Laser Interferometer for Measuring High Velocities of any Reflecting Surface,"
J.Appl.Phys. 43:4669-75 (1972). -Sandia-
(Useful for plate-impact experiments.)

a. Some Results


Cassity, G.R. — "Stress Waves in Solids," J.Appl.Phys. 31:1377-81 (1960). (Experiments with explosives in contact with metal cylinders.)

Fowles, G.R. — "Attenuation of the Shock Wave Produced in a Solid by a Flying Plate," J.Appl.Phys. 31:655-661 (1960).

Kolsky, H.
Douch, L.S. — "Experimental Studies in Plastic Wave Propagation," J.Mech.Phys.Solids 10:195-223 (1962).

Keller, D.V. — "Shock Properties in Solids and Foams and Studies of Non-Hydrodynamic Attenuation (Experimental Data to Improve Theory)," Nortronics, Newbury Park, Calif., ARD-66-31R, AD636271, 149pp, Mar 1966.

Alder, B.J. — "Physics Experiments with Strong Pressure Pulses," pp 385-419 of W. Paul & D.M. Warschauer (eds.), Solids Under Pressure (McGraw-Hill, N.Y., 1963).

Jacobs, S.J. — "Proceedings: Fourth Symposium (International) on Detonation," Oct 1965, Naval Ordnance Laboratory, Office of Naval Research ACR-126, U.S. Government Printing Office.

Jacobs, S.J.
Roberts, R. — "Proceedings: Fifth Symposium (International) on Detonation," Aug 1970, Naval Ordnance Laboratory, Office of Naval Research ACR-184, U.S. Government Printing Office.

b. Electromagnetic Velocity Gage

Edwards, D.J.
Erkman, J.C. "The Electromagnetic Velocity Gage and Applications to the Measurement of Particle Velocity in PMMA," Naval Ordnance Lab. NOLTR-70-79, AD717346, 48pp, Jul 1970.

Franz, R.E. "An Electromagnetic Measurement of the Shock Hugoniot of Teflon," Ballistic Res. Labs. BRL-MR-2075, AD716333, 21pp, Nov 1970.

c. Pulsed Electron Beam: Energy Deposition


Katz, L.
Penfold, A.S. "Range-Energy Relations for Electrons and the Determination of Beta-Ray End-Point Energies by Absorption," Rev.Mod.Phys. 24:28-44 (1952). (Aluminum; 0.01-2.5 Mev)

Spencer, L.V. "Theory of Electron Penetration," Phys.Rev. 98:1597-1615 (1955).

Gross, M.J. "Irradiation Effects in Borosilicate Glass," Phys.Rev. 107:368-373 (1957).

Kanter, H.
Sternglass, E.J. "Interpretation of Range Measurements for Kilovolt Electrons in Solids," Phys.Rev. 126:620-6 (1962). (Maximum range in Al, Ni, Ag, Au for 1 to 10 kev.)

Ehrenberg, W.
King, D.E.N. "The Penetration of Electrons into Luminescent Materials," Proc.Phys.Soc. 81:751-766 (1963). (10 to 80 kev.)

Scott, W.T. "The Theory of Small-Angle Multiple Scattering of Fast Charged Particles," Rev.Mod.Phys. 35:231-313 (1963).

Berger, M.J. "Monte Carlo Calculation of the Penetration and Diffusion of Fast Charged Particles," in B. Alder, et al (eds.), Methods in Computational Physics, Volume 1. Statistical Physics (Academic Press, N.Y., 1963) pp 135-215.

Nakai, Y. "Energy Dissipation of Electron Beams in Matter," Jap.J.Appl.Phys. 2:743-756 (1963).

Schumacher, B.W. "A Review of the (Macroscopic) Laws for the Electron Penetration Through Matter," in R. Bakish (ed.), First International Conference on Electron and Ion Beam Science and Technology (Wiley, N.Y., 1965) pp 5-70.

Kessaris, N.D. "Penetration of High-Energy Electron Beams in Water," Phys.Rev. 145:164-174 (1966).

Anderson, W.W. "Electron Beam Excitation in Laser Crystals," Applied Optics 5:167-8 (1966). -Stanford U.- (Concerns electron penetration depth.)

Klein, C.A. "Further Remarks on Electron Beam Pumping of Laser Materials," Applied Optics 5:1922-4 (1966). (Energy dissipation of kev electrons.)

Bishop, H.E. "Electron Scattering in Thick Targets," Brit.J.Appl.Phys. 18:703-715 (1967). (Monte Carlo calculations for 5-40 kev.)

c. Pulsed Electron Beam: Energy Deposition (cont'd)


Zerby, C.D.
Keller, F.L. "Electron Transport Theory, Calculations, and Experiments," Nucl.Sci.Engg. 27:190-218 (1967).

Miller, D.
et al "A Pulsed Radiation Energy Spectrometer Using Ferroelectrics," IEEE Trans.Nucl.Sci. NS-14(6):245-251 (1967).

Reimer, L. "Monte-Carlo-Rechungen zur Elecktronendiffusion," Optik 27:86-98 (1968). (9-100 kev)

Dickinson, W.C.
Lent, E.M. "Calculation of Forward Bremsstrahlung Spectra From Thick Targets," UCRL-50442, 6 Jun 1968, 22pp.

Roy, R.R.
Reed, R.D. Interactions of Photons and Leptons with Matter (Academic Press, N.Y., 1968).

Little, R.
Otteson, J.
Childers, F.K. "High Intensity Pulsed Electron Beam Energy Deposition in Solid Dielectrics," IEEE Trans.Nucl.Sci. 250-4 (1969).

Schallhorn, D.R.
Buxton, L.D. "Predicted and Measured Depth Dose Profiles for Pulsed Electron Spectra," IEEE Trans.Nucl.Sci. 242-9 (1969).

Shimizu, R.
Murata, K. "Monte Carlo Calculations of the Electron-Sample Interactions in the Scanning Electron Microscope," J.Appl.Phys. 42:387-394 (1971). -Osaka U.- (10-30 kev; Al and Cu.)

Cosslett, V.E.
Thomas, R.N. "Multiple Scattering of 5-30 kev Electrons in Evaporated Metal Films. I. Total Transmission and Angular Distribution," Brit.J.Appl.Phys. 15:883-907 (1964). "... II. Range-Energy Relations," Brit.J.Appl.Phys. 15:1283-1300 (1964).

Buxton, L.D. "The Electron Transport Computer Code ZEBRA 1," Harry Diamond Labs. HDL-TR-1536, 21pp, Jun 1971. (This is a user's manual; FORTRAN listings of the code are not included.)

Everhart, T.E.
Hoff, P.H. "Determination of Kilovolt Electron Energy Dissipation vs Penetration Distance in Solid Materials," J.Appl.Phys. 42:5837-46 (1971). -U.Calif.Berkeley- ("A universal curve of energy-dissipation range vs normalized electron energy is proposed, which includes the average atomic number Z of the material...")

c. Pulsed Electron Beam: Energy Deposition (cont'd)


| | |
|---|---|
| Rauch, J.E. | "Electron Spectra Produced by the 705 Febetron at 10, 12, 15, 20, 30, and 35 Kv Charging and the Resultant Dose Depositions in Metallic Elements Ranging from Beryllium to Uranium," Lockheed Missiles & Space Co. IMSC-6-78-69-3, 127pp, Jan 1969. |
| Lonergan, J.A.<br>Jupiter, C.P.<br>Merkel, G. | "Electron Energy Straggling Measurements by Thick Targets of Beryllium, Aluminum, and Gold at 4.0 and 8.0 Mev," J.Appl.Phys. 41:678-688 (1970). |
| Birkhoff, R.D. | "The Passage of Fast Electrons Through Matter," in S. Flügge (ed.), Handbuch der Physik, Band XXXIV, Korpuskeln und Strahlung in Materie II (Springer-Verlag, Berlin, 1958) pp 53-138. |
| Bartine, D.E.<br>et al | "Low-Energy Electron Transport by the Method of Discrete Ordinates," Nucl.Sci.Eng. 48:159-178 (1972). -ORNL- (1-D ANISN code is used for 1, 2.5, 4, and 8 Mev electrons into aluminum and 1 Mev into gold.) |
| Rosenstein, M.<br>Eisen, H.<br>Silverman, J. | "Electron Depth-Dose Distribution Measurements in Finite Polystyrene Slabs," J.Appl.Phys. 43:3191-3202 (1972). (Experimental dose vs depth for 2 Mev electrons.) |


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Pulsed electron beam machines are finding considerable application in materials studies (see next page). In order to calculate the stress waves resulting from such loading, one needs the profile of energy vs depth resulting from the electron deposition. This may be done as follows:
(1) If the deposition takes place in a slab of a single element, the deposition may already have been calculated for the desired machine spectrum (see Rauch, above).
(2) If the deposition takes place in a slab of a single element but the machine spectrum differs from what has already been done, the dose vs depth can be calculated by folding the desired spectrum with monoenergetic dose-depth data (e.g., from Rauch, above).
(3) If the target contains slabs of more than one element within the deposition depth, one will have to calculate the depth-dose profile with a computer program such as ZEBRA (Buxton, 1971).
(4) If the target consists not of slabs but of something like fibers of one element embedded in a different element, one probably has to settle for approximating the target with a slab of some average element.
(5) If the interaction cannot be approximated by slab symmetry and two-dimensional flow is required, you will exceed your budget.

c. Pulsed Electron Beam: Applications


| | |
|---|---|
| Oswald, R.B.,Jr. | "Fracture of Silicon and Germanium Induced by Pulsed Electron Irradiation," IEEE Trans.Nucl.Sci. NS-13:63-69 (1966). -HDL- |
| Graham, R.A.<br>Hutchison, R.E. | "Thermoelastic Stress Pulses Resulting from Pulsed Electron Beam," Appl.Phys.Ltrs 11:69-71 (1967). -Sandia- |
| Oswald, R.B.,Jr.<br>Schallhorn, D.R.<br>et al | "... ...ic Response of Solids Exposed to a Pulsed-Electron-Beam," Appl.Phys.Ltrs 13:279-281 (1968). -HDL- (Free-surface motion measurements.) |
| Woodruff, L.W. | "Thermo-Dynamic Effects Induced in Metals by a 2-Mev Pulsed Electron Beam," Lawrence Radiation Lab. UCRL-50621, 158pp, Aug 1969. (Experiments and theory.) |
| Perry, F.C. | "Laser Interferometer Determination of the Dynamic Response of Aluminum to Intense Electron Pulses," Sandia Labs. SC-RR-69-560, 14pp, Sep 1969. (A room-temperature Grüneisen parameter of 2.00 ±15% is found for T6-6061 aluminum.) |
| Oswald, R.B.,Jr. | "Grüneisen Data From the One-Dimensional Thermoelastic Response of Elastic Materials," Appl.Phys.Ltrs 16:24-26 (1970). -HDL- (Direct measurement with pulsed e-beam loading.) |
| Perry, F.C. | "Thermoelastic Response of Polycrystalline Metals to Relativistic Electron Beam Absorption," J.Appl.Phys. 41:5017-22 (1970). -Sandia- |
| Perry, F.C. | "Electron Beam Induced Stress Waves in Solids," Appl.Phys.Ltrs 17:478-480 (1970). -Sandia- (Experiments on 6061-T6 Al showed slow rise of plastic wave. WONDY calculations were used to obtain wave profiles.) |
| Woodruff, L.W.<br>Giedt, W.H.<br>Nesse, J.L. | "Surface Melting, Spallation, and Stresses Induced in Metals by Pulsed Electron Beam Heating," J.Appl.Mech. 38:363-370 (1971) -LRL- |
| Oswald, R.B.,Jr.<br>McLean, F.B.<br>Schallhorn, D.R.<br>Buxton, L.D. | "One-Dimensional Thermoelastic Response of Solids to Pulsed Energy Absorption," J.Appl.Phys. 42:3463-73 (1971). -HDL- (Rear free-surface motion is used to get the Grüneisen parameter for several materials.) |
| McLean, F.B.<br>Oswald, R.B.,Jr.<br>Schallhorn, D.R.<br>Buxton, L.D. | "Temperature Dependence of the Dynamic Response of Si, Ge, and InSb to a Pulsed Electron Beam," J.Appl.Phys. 42:3474-78 (1971). -HDL- (20 to 300°K initial temperature.) |

d. Unfocused Laser Beam

Pulsed lasers are capable of giving a pulse of radiation that is deposited so quickly (<50 nsec) that the energy has no time to be removed by heat conduction or by stress waves. The output characteristics of lasers are described in many books, for example,

B.A. Lengyel, Introduction to Laser Physics (Wiley, N.Y., 1966)

B.A. Lengyel, Lasers, 2nd edition (Wiley, N.Y., 1971).

An unfocused laser beam can give a roughly uniform loading over an area of several square millimeters (or several square centimeters, if a diverging lens is used). The fact that the beam is coherent is of no importance here--it is the short duration and high total energy of the pulse that matter. The loading is not truly uniform because of the mode structure of the beam—the coherence of the light is a disadvantage. For a thin target, this kind of loading gives one-dimensional strain. The beam may penetrate deeply into a transparent material or only $10^{-5}$ cm into an opaque material. The transparent material can be dyed to reduce the depth of penetration or to confine the absorption to a dyed region inside the material. An unfocused beam produces a loading that may be severe enough to stress a one-micron thick surface layer of a soft metal beyond its yield point, but the stress wave sent into the bulk of the material is usually small—a few bars. This stress may be increased by pressing a transparent material against the loaded surface to remove the free surface.

A focused laser beam gives violent loading and can dig a crater in a metal or punch a hole through a thin sheet. The advantage of the beam coherence is that it allows focusing to a very small area. The loading is not as neat as the one-dimensional strain of the unfocused beam; spherical stress waves are sent out from the crater but they are complicated by relief waves from the free unloaded surface surrounding the crater.

Focused laser beams are not covered in this bibliography. For further information, see:

J.F. Ready, Effects of High-Power Laser Radiation (Academic Press, N.Y., 1971).

d. Unfocused Laser Beam (cont'd)


White, R.M. — "Elastic Wave Generation by Electron Bombardment or Electromagnetic Wave Absorption," J.Appl.Phys. 34:2123-4 (1963). -GE-

White, R.M. — "Generation of Elastic Waves by Transient Surface Heating," J.Appl.Phys. 34:3559-67 (1963). -U.Cal.Berk.-

Zaker, T.A. — "Stress Waves Generated by Heat Addition in an Elastic Solid," J.Appl.Mech. 32:143-150 (1965). -IIT-

Ready, J.F. — "Effects Due to Absorption of Laser Radiation," J.Appl.Phys. 36:462-8 (1965). -HRC-

Gournay, L.S. — "Conversion of Electromagnetic to Acoustic Energy by Surface Heating," J.Acous.Soc.Am. 40:1322-30 (1966). -Mobil-

Bullough, R.
Gilman, J.J. — "Elastic Explosions in Solids Caused by Radiation," J.Appl.Phys. 37:2283-87 (1966). -U.Ill.-

Penner, S.S.
Sharma, O.P. — "Interaction of Laser Radiation with an Absorbing Semi-Infinite Solid Bar," J.Appl.Phys. 37:2304-08 (1966). -U.Cal.S.D.-

Morland, L.W. — "Generation of Thermoelastic Stress Waves by Impulsive Electromagnetic Radiation," AIAA J. 6:1063-66 (1968). -U.Cal.S.D.-

Rousseau, D.L.
Leroi, G.E.
Falconer, W.E. — "Charged-Particle Emission upon Ruby Laser Irradiation of Transparent Dielectric Materials," J.Appl.Phys. 39:3328-32 (1968). -Frick Chem.Lab.-

Rao, D.V.G.L.N. — "Laser-Induced Resistivity Changes in Silicon," J.Appl.Phys. 39:4853 (1968). -Maser Optics-

Harrington, R.E. — "Thermal Conduction Near a Metal Surface Exposed to Blackbody Radiation," J.Appl.Phys. 39:3699-3706 (1968). -Union Carbide-

Bushnell, J.C.
McCloskey, D.J. — "Thermoelastic Stress Production in Solids," J.Appl.Phys. 39:5541-46 (1968). -Sandia Labs.-

Davit, J. — "Mechanism for Laser Surface Damage of Glasses," J.Appl.Phys. 39:6052-56 (1968). -France-

Steverding, B.
Werkheiser, A.H. — (Abstract) "Shock Generation by a Pulsed Laser," Bull.Am.Phys.Soc. Ser. II, 13(12): (Dec 1968). -Redst.Ars.-

Sery, R.S.
Gordon, D.I.
Lehto, D.L. — (Abstract) "Magnetic Property Changes in Magnetic Materials Induced by a Q-Switched Unfocused Laser Beam," Bull.Am.Phys.Soc. Ser. II, 14(3):386 (Mar 1969). -NOL-

d. Unfocused Laser Beam (cont'd)


Bedair, S.M.
Smith, H.P.,Jr.
"Atomically Clean Surfaces by Pulsed Laser Bombardment," J.Appl.Phys. 40:4776-81 (1969). -U.Cal.Berk.-

Nunziato, J.W.
"Radiation Generated Wave Propagation in Elastic Nonconductors," Sandia Labs. SC-RR-70-428, 21pp, Jun 1970.

Hegemier, G.A.
Tzung, F.
"Stress-Wave Generation in a Temperature-Dependent Absorbing Solid by Impulsive Electromagnetic Radiation," J.Appl.Mech. 37:339-344 (1970). -U.Cal.S.D.-

Morland, L.W.
"Elastic-Plastic Wave Generation by Impulsive Electromagentic Radiation,"
Calif.U.San Diego Tech.Rept.No. 23, AD676324, 30pp, Sep 1968.
(Instantaneous deposition; absorption depth over 1 mm.)

Morland, L.W.
"Plastic Yield and Reverse Yield Waves Generated by Impulsive Electromagnetic Radiation,"
Calif.U.San Diego Tech.Rept.No. 24, AD678381, 23pp, Oct 1968.

Anderholm, N.C.
"Laser-Generated Stress Waves,"
Appl.Phys.Ltrs. 16:113-5 (1970). -Sandia Labs.-
(A transparent material is used to impede the expansion of the vaporized absorber.)

Peercy, P.S.
"Ultrafast Rise Time Laser-Induced Stress Waves,"
Appl.Phys.Ltrs. 16:120-2 (1970).
(Rise times near 1 nsec; amplitude about 5 kbar.)

Anderholm, N.C.
Roade, R.R.
"Laser-Induced Stress Waves in Quartz Phenolic,"
J.Appl.Phys. 43:434-6 (1972). -Sandia-
(Grüneisen parameter of 0.22 is found for 2-D phenolic.)

Walsh, E.K.
"Induced One-Dimensional Waves in Elastic Nonconductors,"
J.Appl.Mech. 34:937-941 (1967). (Theory).

Apollonov, V.V.
et al
"Thermoelastic Deformation of a Solid Surface by a Laser Beam," JETP Ltrs. 15(5):172-4 (1972).
(Interferometer measurements were made of the bulge of a fused-quartz disk due to irradiation by a $CO_2$ laser beam.)

III. EQUATIONS OF STATE
A. Theory (before 1960)

Cook, R.K. "Variation of Elastic Constants and Static Strains with Hydrostatic Pressure: A Method for Calculation from Ultrasonic Experiments," J.Acoust.Soc.Am. 29:445-9 (1957). -Bell Tel.-

Benedek, G.B. "Deduction of the Volume Dependence of the Cohesive Energy of Solids from Shock-Wave Compression Measurements," Phys.Rev. 114:467-475 (1959). (Applied to Be, Al, Co, Ni, Cu, and Ag.)

Grüneisen, E. "Theorie des festen Zustandes einatomiger Elemente," Ann. der Physik, 4th Series 39:257-306 (1912).

A. Theory (before 1960, cont'd)


| | |
|---|---|
| Slater, J.C. | "Note on Grüneisen's Constant for the Incompresseible Metals," Phys.Rev. 57:744-6 (1940). |
| Dugdale, J.S.<br>MacDonald, D.K.C. | "The Thermal Expansion of Solids," Phys.Rev. 89:832-4 (1953). |
| Barron, T.H.K. | "On the Thermal Expansion of Solids at Low Temperatures," Phil.Mag. 46:720-734 (1955). |
| Duvall, G.E.<br>Zwolinski, B.J. | "Entropic Equations of State and Their Application to Shock Wave Phenomena in Solids," J.Acous.Soc.Am. 27:1054-8 (1955). |
| Overton, W.C.,Jr.<br>Caffney, J. | "Temperature Variation of the Elastic Constants of Cubic Elements. I. Copper," Phys.Rev. 98:969-977 (1955). |
| Gilvarry, J.J. | "Grüneisen Parameter for a Solid Under Finite Strain," Phys.Rev. 102:331-340 (1956). |
| Barron, T.H.K. | "Grüneisen Parameters for the Equation of State of Solids," Ann.Phys. 1:77-90 (1957). |
| Blackman, M. | "On Negative Volume Expansion Coefficients," Phil.Mag. 3:831-8 (1958). |
| Berger, J.<br>Joigneau, S. | "Au sujet de relation lineaire existant entre la vitesse materielle et la vitesse de l'onde de choc se propageant dans un metal," Compt.Rend. 249:2506-8 (1959). |
| Oldroyd, J.G. | "On the Formulation of Rheological Equations of State," Proc.Roy.Soc. A200:523-541 (1950). |
| Zel'dovich, Ia.B. | "Investigations of the Equation of State by Mechanical Measurements," Soviet Physics-JETP 5:1287-8 (1957). |
| Birch, F. | "The Effect of Pressure Upon the Elastic Parameters of Isotropic Solids, According to Murnaghan's Theory of Finite Strain," J.Appl.Phys. 9:279-288 (1938). |
| Birch, F. | "Finite Strain of Cubic Crystals," Phys.Rev. 71:809-824 (1947). -Harvard U.- |
| Gilvarry, J.J. | "The Lindemann and Grüneisen Laws," Phys.Rev. 102:308-316 (1956). -Rand- |
| Gilvarry, J.J. | "Grüneisen's Law and the Fusion Curve at High Pressure," Phys.Rev. 102:317-325 (1956). -Rand- |

A. Theory (cont'd; 1960-1965)


Kormer, S.B.
Urlin, V.D. "Interpolation Equations of State of Metals for the Region of Ultrahigh Pressures," Soviet Physics-Doklady 5:317-320 (1960).

Fumi, F.G.
Tosi, M.P. "On the Mie-Grüneisen and Hildebrand Approximations to the Equation of State of Cubic Solids," J.Phys.Chem.Solids 23:395-404 (1962).

Kormer, S.B.
Funtikov, A.I.
Urlin, V.D.
Kolesnikova, A.N. "Dynamic Compression of Porous Metals and the Equation of State with Variable Specific Heat at High Temperatures," Soviet Physics-JETP 15:477-488 (1962).

Enig, J.W. "A Complete E,P,V,T,S Thermodynamic Description of Metals Based on the P,u Mirror-Image Approximation," J.Appl.Phys. 34:746-754 (1963).

Gandel'man, G.M. "Quantum-Mechanical Derivation of an Equation of State of Iron," Soviet Physics-JETP 16:94-103 (1963).

Backman, M.E. "Form for the Relation Between Stress and Finite Elastic and Plastic Stress under Impulsive Loading," J.Appl.Phys. 35:2524-33 (1964). -NOTS-

McCloskey, D.J. "An Analytic Formulation of Equations of State," Rand Corp. RM-3905-PR, 93pp, Feb 1964.

Pastine, D.J. "An Equation of State for Face-Centered Cubic Metals," J.Appl.Phys. 35:3407-14 (1964). -NOL-

Andersen, W.H. "Evaluation of the Grüneisen Parameter for Compressed Substances - I. Metals," Proc. Fourth Symp. Deton. 205-212 (1965). -SHI-

Pastine, D.J. "Formulation of the Grüneisen Parameter for Monatomic Cubic Crystals," Phys.Rev. 138:A767-A770 (1965).

Kopyshev, V.P. "Grüneisen Constant in the Thomas-Fermi Approximation," Soviet Physics-Doklady 10:336-9 (1965).

Ginell, R.
Quigley, T.J. "Compressibility of Solids and Tait's Law: I: P-V Relationships of the Alkali Metals," J.Phys.Chem.Solids 26:1157-69 (1965). -CUNY-

Anderson, O.L.
Nafe, J.E. "The Bulk Modulus-Volume Relationship for Oxide Compounds and Related Geophysical Problems," J.Geophys.Res. 70:3951-63 (1965). -Bell Tel.-

A. Theory (1960-1965, cont'd)


Perzyna, P. "The Constitutive Equations for Rate Sensitive Plastic Materials," Quart.Appl.Math. 20:321-332 (1963).

Green, A.E.
Naghdi, P.M. "A General Theory of an Elastic-Plastic Continuum," Arch.Rational Mech.Anal. 18:251-281 (1965).

Heer, E. "Visco-Elastic-Plastic Continuum Equations with Compressibility Effects," General Electric Space Sci. Lab. R65SD30, Reprint No. 350, 38pp, Jul 1965.

Matin, S.A. "A Constitutive Relation for Compressible Plastic Materials," Appl.Sci.Res. A 15:137-140 (1965).

Cristescu, N. "Loading-Unloading Criteria for Rate Sensitive Materials," Archiwum Mechaniki Stosowanej 2(17):291-304 (1965).

Thurston, R.N. "Ultrasonic Data and the Thermodynamics of Solids," Proc. IEEE 53:1320-36 (1965). -Bell Tel.-
("This is primarily a tutorial paper on the use of ultrasonic velocity data, in conjunction with data on the specific heat and thermal expansion, to find the adiabatic and isothermal elastic coefficients and their first derivatives with respect to pressure and temperature.")

Leibfried, G.
Ludwig, W. "Theory of Anharmonic Effects in Crystals," in F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Volume 12 (Academic Press, N.Y., 1961) pp 275-444.

Coleman, B.D.
Noll, W. "The Thermodynamics of Elastic Materials with Heat Conduction and Viscosity," Arch.Rat.Mech.Anal. 13:167-178 (1963).

Knopcff, L. "Equations of State of Matter at Ultra-High Pressures," in R.S. Bradley (ed.), High Pressure Physics and Chemistry, Volume 1 (Academic Press, N.Y., 1963) pp 247-263.

Knopoff, L. "Solids: Equations of State of Solids at Moderately High Pressures," in R.S. Bradley (ed.), High Pressure Physics and Chemistry, Volume 1 (Academic Press, N.Y., 1963) pp 227-245.

Vashchenko, V.Ya.
Zubarev, V.N. "Concerning the Gruneisen Constant," Soviet Physics-Solid State 5:653-5 (1963).
(Formula derived from free volume theory.)

Babb, S.E.,Jr. "Parameters in the Simon Equation Relating Pressure and Melting Temperature," Rev.Mod.Phys. 35:400-413 (1963).

A. Theory (cont'd; 1966)


Anderson, C.L. "Derivation of Wachtman's Equation for the Temperature Dependence of Elastic Moduli of Oxide Compounds," Phys.Rev. 144:553-7 (1966). -Bell Tel.-

Anderson, C.L. "The Use of Ultrasonic Measurements Under Modest Pressure to Estimate Compression at High Pressure," J.Phys.Chem.Solids 27:547-565 (1966). -Bell Tel.-

Huang, Y.N. "Thermodynamics of Shock Compression of Metals," J.Chem.Phys. 45:1979-84 (1966). -Watervliet-

Kraut, E.A.
Kennedy, G.C. "New Melting Law at High Pressures," Phys.Rev.Ltrs. 16:608-9 (1966). -UCLA-

Kraut, E.A.
Kennedy, G.C. "New Melting Law at High Pressures," Phys.Rev. 151:668-675 (1966). -UCLA-

Pastine, D.J. "Thermal Expansion and Structure of Anisotropic Monatomic Solids," Phys.Rev. 148:748-758 (1966).

Takeuchi, H.
Kanamori, H. "Equations of State of Matter from Shock Wave Experiments," J.Geophys.Res. 71:3985-94 (1966).

Urlin, V.D. "Melting at Ultra High Pressures in a Shock Wave," Soviet Physics-JETP 22:341-6 (1966).

Wang, C.-C.
Bowen, R.M. "On the Thermodynamics of Non-Linear Materials with Quasi-Elastic Response," Arch.Rat.Mech.Anal. 22:79-99 (1966).

Coleman, B.D.
Gurtin, M.E. "Thermodynamics and One Dimensional Shock Waves in Materials With Memory," Proc.Roy.Soc. A292:562-574 (1966).

Evdokimova, V.V. "Some Relationships Governing the P-T Phase Diagrams and Polymorphic Transformations of Elements Under High Pressures," Sovet Physics-Uspekhi 9:54-72 (1966). (112 refs.)

A. Theory (cont'd; 1967)


Anderson, O.L.
Soga, N.
"A Restriction to the Law of Corresponding States,"
J.Geophys.Res. 72:6754-7 (1967). -Lamont-

Brugger, K.
Fritz, T.C.
"Grüneisen Gamma from Elastic Data,"
Phys.Rev. 157:524-531 (1967). -Bell Tel.-

Huang, Y.K.
"On Static and Dynamic Compressibilities of Debye Solids at High Pressures,"
J.Chem.Phys. 46:4570-5 (1967). -Watervliet-

Wallace, D.C.
"Thermoelasticity of Stressed Materials and Comparison of Various Elastic Constants,"
Phys.Rev. 162:776-789 (1967). -Sandia-

Barsch, G.R.
"Adiabatic, Isothermal, and Intermediate Pressure Derivatives of the Elastic Constants for Cubic Symmetry. I. Basic Formulae,"
Phys.Stat.Solidi 19:129-138 (1967).

Barsch, G.R.
Chang, Z.P.
"Adiabatic, Isothermal, and Intermediate Pressure Derivatives of the Elastic Constants for Cubic Symmetry. II. Numerical Results for 25 Materials,"
Phys.Stat.Solidi 19:139-151 (1967).

Thomas, T.Y.
"Theoretical Effect of Large Hydrostatic Pressures on the Tensile Strength of Materials,"
Proc.Nat.Acad.Sci. 57:1195-7 (1967).

Royce, E.B.
"Stability of the Electronic Configuration and Compressibility of Electron Orbitals in Metals Under Shock-Wave Compression," Phys.Rev. 164:929-943 (1967).

Key, S.W.
"Grüneisen Tensor for Anisotropic Materials,"
J.Appl.Phys. 38:2923-8 (1967).

A. Theory (cont'd; 1968)


Duvall, G.E.
Fowles, G.R.
et al
"Equations of State in Solids,"
Wash.St.U. WSU-SDL-68-01, AD680960, 130pp, Feb 1968.
(Melting solids.)

Bansigir, K.G.
"Evaluation of the Grüneisen Constant,"
J.Appl.Phys. 39:4024-6 (1968). -Osmania U.-

Barsch, G.R.
Chang, Z.P.
"Second- and Higher-Order Effective Elastic Constants of Cubic Crystals under Hydrostatic Pressure,"
J.Appl.Phys. 39:3276-84 (1968). -Penn.St.U.-

Coleman, B.D.
"On the Use of Symmetry to Simplify the Constitutive Equations of Isotropic Materials with Memory,"
Proc.Roy.Soc. A306:449-476 (1968).

Heyda, J.F.
"Correlation of Two 'Universal' Hugoniots,"
J.Appl.Phys. 39:4873 (1968).

Johnson, J.N.
"Single-Particle Model of a Solid: The Mie-Grüneisen Equation," Am.J.Phys. 36:917-9 (1968). -Sandia-

Pastine, D.J.
Forbes, J.W.
"Simplified Theory of Anharmonic Contributions to the Thermodynamic Properties of Solid Sodium Metal,"
Phys.Rev. 175:905-912 (1968). -NOL-

Pastine, D.J.
"P, v, T Equation of State for Polyethylene,"
J.Chem.Phys. 49:3012-22 (1968). -NOL-

Pastine, D.J.
"Accurate Relations Determining the Volume Dependence of the Quasiharmonic Grüneisen Parameter,"
Phys.Rev.Ltrs. 21:1582-5 (1968). -NOL-

Rybakov, A.P.
"Empirical Formula for the Relationship Between the Velocity of Sound, Density, and Pressure in a Shock Wave,"
Soviet Physics-Acoustics 14:115-7 (1968).

Swenson, C.A.
"Equation of State of Cubic Solids: Some Generalizations,"
J.Phys.Chem.Solids 29:1337-48 (1968). -Iowa St.Coll.-

Thomas, T.Y.
"Stress-Strain Relations for Crystals Containing Plastic Deformation," Proc.Nat.Acad.Sci. 60:1102-4 (1968).

Anderson, O.L.
"Some Remarks on the Volume Dependence of the Grüneisen Parameter," J.Geophys.Res. 73:5187-94 (1968).
(V dependence at low and at high P are very different.)

Anderson, O.L.
"On the Use of Ultrasonic and Shock-Wave Data to Estimate Compressions at Extremely High Pressures,"
Phys.Earth Planet.Interiors 1:169-176 (1968).

A. Theory (cont'd; 1969)

Bobrovskii, S.V.
Gogolev, V.H.
Zamyshlyaev, B.V.
"Construction of Approximate Shock Adiabats of Solids in the Hydrodynamic Region," Soviet Physics-Doklady 14:65-67 (1969).

Foltz, J.V.
Grace, F.I.
"Theoretical Hugonict Stress-Temperature-Strain States for Aluminum and Copper," J.Appl.Phys. 40:4195-9 (1969). -NWL-

Fromme, J.A.
"A Practical Model of Three-Dimensional Viscoelasto-plasticity," Kaman Nuclear KN-69-500(R), AD699835, 39pp, Nov 1969. (For missile response codes.)

Huang, Y.K.
"On the Tait Equation of Compressibility for Solids," J.Phys.Chem. 73:2459-60 (1969). -Watervliet-

Johnson, J.N.
"Constitutive Relation for Rate-Dependent Plastic Flow in Polycrystalline Metals," J.Appl.Phys. 40:2287-93 (1969). -Sandia-

Kratochvil, J.
Dillon, O.W.,Jr.
"Thermodynamics of Elastic-Plastic Materials as a Theory with Internal State Variables," J.Appl.Phys. 40:3207-18 (1969). -U.Kentucky-

Thomsen, L.
Anderson, O.L.
"On the High-Temperature Equation of State of Solids," J.Geophys.Res. 74:981-991 (1969). -Lamont-

Yeh, G.C.K.
"A Comparison of Various Elasticity Formulations Valid for all Admissible Values of Poisson's Ratio," Astronautica Acta 14:317-326 (1969). -TRW-

Parks, V.J.
Durelli, A.J.
"Natural Stress," Int.J.Non-Linear Mech. 4:7-16 (1969). (Introduces an analog of natural strain.)

Knopoff, L.
Shapiro, J.N.
"Comments on the Interrelationships Between Grüneisen's Parameter and Shock and Isothermal Equations of State," J.Geophys.Res. 74:1439-50 (1969). -UCLA-

Shapiro, J.N.
Knopoff, L.
"Reduction of Shock-Wave Equations of State to Isothermal Equations of State," J.Geophys.Res. 74:1435-8 (1969). -UCLA-

A. Theory (cont'd; 1970)


Anderson, O.L. "Elastic Constants of the Central Force Model for Three Cubic Structures: Pressure Derivatives and Equations of State," J.Geophys.Res. 75:2719-40 (1970). (See discussion in J.Geophys.Res. 76:2796-7 (1971).)

Appleby, E.J. "Role of Constitutive Equations of Function Type in Modelling Some Commonplace Mechanical Behavior," J.Appl.Phys. 41:4902-12 (1970). -U.S.Steel-

Barker, B.E.,Jr.
Chen, R.Y.S. "Grüneisen Parameter from Thermal Conductivity Measurements Under Pressure," J.Chem.Phys. 53:2616-20 (1970). -U.Va.-

Dandekar, D.P. "Iterative Procedure to Estimate the Values of Elastic Constants of a Cubic Solid at High Pressures from the Sound Wave Velocity Measurements," J.Appl.Phys. 41:667-672 (1970). -Wash.St.U.-

Fowles, R. "Determination of Constitutive Relations from Plane Wave Experiments," Wash.St.U. WSU-SDL-70-01, AD709736, 74pp, Apr 1970. (Review paper.)

Grover, R. "Comments on the Comparison of Dynamic and Static Compression Data," J.Phys.Chem.Solids 31:2347-51 (1970).

Mao, N.-H. "Empirical Equation of State for High Compression," J.Geophys.Res. 75:7508-12 (1970). -Harvard U.-

Pastine, D.J. "On the Accuracy of the Wachtman-Anderson Relation," J.Geophys.Res. 75:7421-5 (1970). -NOL-

Pastine, D.J.
O'Keeffe, D.J. "Theoretical Estimates of Elastic Relief Wave Velocities for Metals with Applications to Al and Cu," J.Appl.Phys. 41:2743 (1970). -NOL-

Thomsen, L. "On the Fourth-Order Anharmonic Equation of State of Solids," J.Phys.Chem.Solids 31:2003-16 (1970).

A. Theory (cont'd; 1971)

Anderson, O.L.
Demarest, H.H.,Jr.
"Elastic Constants of the Central Force Model for Cubic Structures: Polycrystalline Aggregates and Instabilities," J.Geophys.Res. 76:1349-69 (1971). (Polycrystalline aggregates of crystallites of NaCl, ZnS, CsCl, $CaF_2$.)

Andrews, D.J.
"Calculation of Mixed Phases in Continuum Mechanics," J.Comput.Phys. 7:310-326 (1971). -WSU-

Cowperthwaite, M.
Williams, R.F.
"Determination of Constitutive Relationships with Multiple Gauges in Nondivergent Waves," J.Appl.Phys. 42:457-462 (1971).
(Velocity-time or stress-time records from Lagrangian gauges can be used to calculate constitutive relationships. This article develops the theoretical basis for this.)

Duvall, G.E.
Tung, C.T.
Taylor, S.M.
"Equation of State of Solids," Wash.State U. WSU-SDL-70-02, BRL-CR-24, AD719307, 71pp. Jan 1971.
(On Eyring's significant structure theory.)

Harris, P.
"The Grüneisen Constant of Porous Materials in Energy Deposition Experiments," Picatinny Arsenal Tech. Report 4255, 24pp, Aug 1971.
(Stress relief occurs while the energy is being deposited.)

Holder, J.
Granato, A.V.
"Third-Order Elastic Constants and Thermal Equilibrium Properties of Solids," in W.P. Mason & R.N. Thurston (eds.), Physical Acoustics, Volume VIII (Academic Press, N.Y., 1971) pp 237-277.

Kratochvil, J.
"Finite-Strain Theory of Crystalline Elastic-Inelastic Materials," J.Appl.Phys. 42:1104-8 (1971).

Mathur, S.S.
Sharma, Y.P.
Gupta, P.N.
"Lattice Theory of Second- and Third-Order Elastic Constants of Aluminum, Copper, and Nickel," J.Appl.Phys. 42:5335-42 (1971). -IIT, India-

McLachlan, D.,Jr.
"Effect of Pressure on the Melting Temperature of Metals," J.Geophys.Res. 76:2780-89 (1971).

Royce, E.B.
"GRAY, A Three-Phase Equation of State for Metals," Lawrence Livermore Lab. UCRL-51121, 48pp, Sep 1971.

Ruppin, R.
"Grüneisen Parameter for Born-von Kármán Lattices," Phys.Rev. B 3:1497-8 (1971). -URC-

Ryabinin, Yu.N.
Beresnev, B.I.
Martinov, E.D.
"Mechanical Properties and Processes in Solids under High Pressure," J.Geophys.Res. 76:1370-75 (1971).
("Increased plasticity of brittle solids resulting from pressure and its causes are considered...")

A. Theory (1971, cont'd)

Zharkov, V.N.
Kalinin, V.A.
Equations of State for Solids at High Pressures and Temperatures (Consultants Bureau, N.Y., 1971) 257pp. (Translated from 1968 Russian book.)

A. Theory (cont'd; 1972)

Ching, H.Ma — "Idealized Dynamic Stress-Strain Curve of Uniaxial Compression of Metallic Solids," Phys.Rev. B 5:2826-9 (1972). (A dynamic stress-strain curve is suggested which is good when compression rate is very high. A second cusp between the Hugoniot elastic limit and the "stable shock threshold" is predicted.)

Prieto, F.E. — "Volume Derivative of the Grüneisen Parameter at Zero-Pressure," J.Phys.Chem.Solids 33:797-800 (1972). (Second order series expansion in compression. Quadratic shock velocity vs particle velocity relation is considered.)

Abel, A.
Muir, H. — "The Bauschinger Effect and Discontinuous Yielding," Phil.Mag. 26:489-504 (1972). ("...involves not only the initial yield strength, but the entire stress-strain curve after prestraining.")

Brandt, N.B.
et al — "Influence of Pressure on the Fermi Surface of Metals," Soviet Physics-Uspekhi 14:438-454 (1972). (75 refs.)

B. Collections of Data


Walsh, J.M.
Christian, R.H.
"Equation of State of Metals from Shock Wave Measurements," Phys.Rev. 97:1544-56 (1955).

Walsh, J.M.
Rice, M.H.
McQueen, R.G.
Yarger, F.L.
"Shock-Wave Compressions of Twenty-Seven Metals. Equations of State of Metals," Phys.Rev. 108:196-216 (1957).

Rice, M.H.
McQueen, R.G.
Walsh, J.M.
"Compression of Solids by Strong Shock Waves," in F. Seitz & D. Turnbull (eds.), Solid State Physics, Advances in Research and Applications, Volume 6 (Academic Press, N.Y., 1958) pp 1-63.

McQueen, R.G.
Marsh, S.P.
"Equation of State for Nineteen Metallic Elements From Shock-Wave Measurements to Two Megabars," J.Appl.Phys. 31:1253-69 (1960).

Al'tshuler, L.V.
"Shock Adiabats and Zero Isotherms of Seven Metals at High Pressures," Soviet Physics-JETP 15:65-74 (1962). (Cu, Fe, Ni, Zn, Cd, Sn, and Pb.)

Gschneidner, K.A.
"Physical Properties and Interrelationships of Metallic and Semimetallic Elements," in F.Seitz & D.Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Volume 16 (Academic Press, N.Y., 1964) pp 275-426.

Anderson, G.D.
"A Summary of the Soviet Papers on the High Pressure Equation of State of Metals," AFWL-TR-65-130, AD621487, 52pp, Sep 1965.

Graham, R.A.
Jones, O.E.
"A Summary of Hugoniot Elastic Limit Measurements," Sandia Labs. SC-R-68-1857, 13pp, Oct 1968.

Lawrence, R.J.
Mason, D.S.
Benzley, S.E.
"Dynamic Material Property Library," Sandia Labs. SC-DR-68-885, 58pp, Dec 1968. (Computer routines for use with WONDY and TOODY. Tables of data given for Al foam, Al 1060, Al 2024, Al 6061, Be, Comp B, Cu, Au, pyrolytic graphite, Fe foam, Fe, Pb, PBX-9404, TNT, W, U, water.)

Bakken, L.R.
Anderson, P.D.
"An Equation-of-State Handbook (Conversion Relations Between the WONDY/TOODY and the PUFF/KO/HEMP Classes of Shock Wave Propagation Computer Codes)," Sandia Labs. SCL-DR-68-123, 54pp, Jan 1969. (Includes tables of data for 40 materials.)

B. Collections of Data (cont'd)


Hanlein, S.L.
Hinckley, W.M.
Stecher, F.P.
"Comparison of Mechanical and Acoustic Properties for Selected Nonferrous, Ferrous, and Plastic Materials," Naval Ordnance Lab. NOLTR-70-141, 107pp, Jul 1970. (Ordered lists of density, sound speed, etc. are given for 356 non-ferrous, 173 ferrous, and 67 plastic materials.)

Coleburn, N.L.
"Dynamic Bulk Moduli of Several Solids Impacted by Weak Shock Waves," J.Acous.Soc.Am. 47:269-272 (1970). (Brass, Al, boron carbide, vinylidene chloride, TNT, plexiglas, nylon, epoxy, teflon.)

Al'tshuler, L.V.
Krupnikov, K.K.
Brazhnik, M.I.
"Dynamic Compressibility of Metals Under Pressures from 400,000 to 4,000,000 Atmospheres," Soviet Physics-JETP 34:614-619 (1958). (Cu, Zn, Ag, Cd, Sn, Au, Pb, Bi)

van Thiel, M.
"Compendium of Shock Wave Data," UCRL-50108, several volumes, Jun 1966.

McQueen, R.G.
Marsh, S.P.
Taylor, J.W.
Fritz, J.N.
Carter, W.J.
"The Equation of State of Solids from Shock Wave Studies," in R. Kinslow, High-Velocity Impact Phenomena (Academic Press, N.Y., 1970) pp 293-417. (Good review article with data given for a large number of substances.)

Vaidya, S.N.
Kennedy, G.C.
"Compressibility of 18 Metals to 45 kbar," J.Phys.Chem.Solids 31:2329-45 (1970). -UCLA- (Ag,Al(6061T6),Al,Be,Bi,Ca,Cd,Cu,Fe,In,La,Mo,Ni,Pb,Sn, Ta,Tl,Zn; pyrophyllite, boron nitride, talc.)

Drickamer, H.G. et al
"X-Ray Diffraction Studies of the Lattice Parameters of Solids under Very High Pressure," in F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Volume 19 (Academic Press, N.Y., 1966) pp 135-228. (Ionic, molecular crystals; metals; to 500 kbar.)

Birch, F.
"Compressibility; Elastic Constants," in S.P. Clark, Jr. (ed.), Handbook of Physical Constants, revised edition (Geological Society of America, 1966). (Tables of data for elements, simple compounds, many rocks and minerals; nearly 300 refs.)

Vaidya, S.N.
Kennedy, G.C.
"Compressibility of 22 Elemental Solids to 45 Kb," J.Phys.Chem.Solids 33:1377-89 (1972).

Gray, D.E.(ed.)
American Institute of Physics Handbook, 3rd Edition (A.I.P., N.Y., 1972). 2200pp.

C. Metals
1. Miscellaneous Metals

Daniels, W.B.
Smith, C.S.
"Pressure Derivatives of the Elastic Constants of Copper, Silver, and Gold to 10 000 Bars," Phys.Rev. 111:713-721 (1958).

Chang, Y.A.
Himmel, L.
"Temperature Dependence of the Elastic Constants of Cu, Ag, and Au Above Room Temperature," J.Appl.Phys. 37:3567-72 (1966). -LRL-

Jones, A.H.
Isbell, W.M.
Maiden, C.J.
"Measurement of the Very-High-Pressure Properties of Materials Using a Light-Gas Gun," J.Appl.Phys. 37:3493-99 (1966). -GMRDL-
(Hugoniot data for Fansteel 77, W, Au to 6 Mbar.)

Rohde, R.W.
Pitt, G.H.
"Dislocation Velocities in Nickel Single Crystals," J.Appl.Phys. 38:876-9 (1967). -U.Utah-
(Data at various T as function of stress.)

Fuller, P.J.A.
Price, J.H.
"Dynamic Stress-Strain Release Paths for Aluminum and Magnesium Measured to 200 kb," Brit.J.Appl.Phys. D2:275-286 (1969). -UKAEA-

Grace, F.I.
"Shock-Wave Strengthening of Copper and Nickel," J.Appl.Phys. 40:2649-53 (1969). -NWL-

Gust, W.H.
Royce, E.B.
"Shock-Induced Phase-Transition Pressures in Fe-Cr and Fe-Cr-Ni Alloys," J.Appl.Phys. 41:2443-6 (1970).

Coleburn, N.L.
Forbes, J.W.
"Anomalous Effect of Temperature on Shock-Wave Propagation in Cu-Zn," J.Appl.Phys. 40:4624-6 (1969).

Christou, A.
Brown, N.
"High-Pressure Phase Transitions and Demagnetization in Shock Compressed Fe-Mn Alloys," J.Appl.Phys. 42:4160-70 (1971).
(Transition pressure drops from 133 kbar for pure iron to 70 kbar for iron with 14% Mn.)

Alers, G.A.
Neighbours, J.R.
"The Elastic Constants of Zinc Between 4.2° and 670°K," J.Phys.Chem.Solids 7:58-64 (1958).
(Ultrasonic-pulse experiments.)

Hiki, Y.
Thomas, J.F.,Jr.
Granato, A.V.
"Anharmonicity in Noble Metals: Some Thermal Properties," Phys.Rev. 153:764-771 (1967). -U. Ill.-
(Copper, silver, gold; calculations.)

Hsieh, K.
Bolsaitis, P.
"An Equation of State of the Noble Metals Based on Their Elastic and Cohesive Properties," J.Phys.Chem.Solids 33:1838-40 (1972). (Calculations.)

2. Alkali Metals


Rice, M.H. "Pressure-Volume Relations for the Alkali Metals from Shock-Wave Measurements," J.Phys.Chem.Solids 26:483-492 (1965). -LASL-

Ehrenfeld, J.
Krimsky, S.
Selvitella, J. "Hugoniot Equation of State of Alkali Metals," J.Appl.Phys. 37:4737-8 (1966). -GCA Corp.-

Pastine, D.J. "Thermal Contributions to the Elastic Constants of Sodium," J.Phys.Chem.Solids 28:522- (1966). -NOL-

Pastine, D.J. "P, V, E, T Equation of State of Metallic Sodium in the Classical Region of Temperature," Phys.Rev.Ltrs. 18:1187-9 (1967). -NOL-

Pastine, D.J.
Forbes, J.W. "Simplified Theory of Anharmonic Contributions to the Thermodynamic Properties of Solid Sodium Metal," Phys.Rev. 175:905-912 (1968). -NOL-

Vaidya, S.N.
Getting, I.C.
Kennedy, G.C. "The Compression of the Alkali Metals to 45 kbar," J.Phys.Chem.Solids 32:2545-56 (1971). -UCLA-
(New experimental results differ from Bridgman's.)

Grover, R. "Thermal Properties of Alkali Metals From Static and Dynamic Compressibilities," J.Phys.Chem.Solids 32:2539-44 (1971). -IRL-

Ginell, R.
Quigley, T.J. "Compressibility of Solids and Tait's Law: I: P-V Relationships of the Alkali Metals," J.Phys.Chem.Solids 26:1157-69 (1965). -CUNY-

Pavlov, S.D. "Theory of the Equation of State of Potassium, Rubidium, and Cesium," Soviet Physics J. 10:35-40 (1967).

Luedemann, H.D.
Kennedy, G.C. "Melting Curves of Lithium, Sodium, Potassium, and Rubidium to 80 Kilobars," J.Geophys.Res. 73:2795-2805 (1968). -UCLA-

Grover, R.
Keeler, R.N.
Rogers, F.J.
Kennedy, G.C. "On the Compressibility of the Alkali Metals," J.Phys.Chem.Solids 30:2091-2103 (1969). -LRL-
(Shock wave and static data are inconsistent above 40 kbar. Inaccuracies in the static data are the likely cause.)

3. Aluminum


Perry, F.C. — "Laser Interferometer Determination of the Dynamic Response of Aluminum to Intense Electron Pulses," Sandia Labs. SC-RR-69-560, 14pp, Sep 1969. (A room-temperature Grüneisen parameter of 2.00±15% is found for T6-6061 aluminum.)

Perry, F.C. — "Electron Beam Induced Stress Waves in Solids," Appl.Phys.Ltrs. 17:478-480 (1970). -Sandia- (Experiments on 6061-T6 aluminum showed slow rise of the plastic wave. WONDY calculations were used to obtain wave profiles.)

Erkman, J.O. — "Spalling of Aluminum and Copper," Poulter Labs., Stanford Res. Inst. TR 015-59, 28pp, AD229841, Oct 1959.

Erkman, J.O. — "Decay of Explosively Induced Shock Waves in Solids and Spalling of Aluminum," Poulter Labs., Stanford Res. Inst. TR 008-60, 16pp, AD244108, Aug 1960.

Isbell, W.M.
Christman, D. — "Shock Propagation and Fracture in 6061-T6 Aluminum From Wave Profile Measurements," General Motors Technical Center, Warren, Mich. MSL-69-60, DASA-2419, AD705536, 38pp, Apr 1970.

Hofmann, R.
Andrews, D.J.
Maxwell, D.E. — "Computed Shock Response of Porous Aluminum," J.Appl.Phys. 39:4555-62 (1968). -PI-

Pastine, D.J.
et al — "Theoretical Shock Properties of Porous Aluminum," J.Appl.Phys. 41:3144-47 (1970). -NOL-

Lazarus, D. — "The Variation of the Adiabatic Elastic Constants of KCl, NaCl, CuZn, Cu, and Al with Pressure to 10,000 bars," Phys.Rev. 76:545-553 (1949).

Mallory, H.D. — "Propagation of Shock Waves in Aluminum," J.Appl.Phys. 26:555-9 (1955). (Plate-slap experiments.)

Waser, W.H.
Rand, J.L.
Marshall, J.M. — "Stress-Wave Propagation in Aluminum," Naval Ordnance Laboratory NOLTR 63-141, 23pp, Jul 1963. (A one-dimensional analysis gives good agreement with air-gun tests on 7075-T6 aluminum.)

Goranson, R.W.
et al — "Dynamic Determination of the Compressibility of metals," J.Appl.Phys. 26:1472-9 (1955). (24 ST Duralumin for the range 0.1 to 0.3 megabars.)

3. Aluminum (cont'd)

Doran, D.G.
Fowles, G.R.
Peterson, G.A.
"Shock-Wave Compression of Aluminum,"
Phys.Rev.Ltrs. 1:402-4 (1958).
(Reflected-light techniques useful in 50-500 kbar range.)

Erkman, J.O.
"Explosively Induced Nonuniform Oblique Shocks,"
Phys.Fluids 1:535-540 (1958).
(Method of characteristics calculations for Al and Cu.)

Katz, S.
Doran, D.G.
Curran, D.R.
"Hugoniot Equation of State of Aluminum and Steel from Oblique Shock Measurements,"
J.Appl.Phys. 30:568-576 (1959).
(40-180 kbar for Al. Low-carbon steel shows phase transition.)

Al'tschuler, L.V.
"Equation of State for Aluminum, Copper, and Lead in the High Pressure Region,"
Soviet Physics-JETP 11:573-9 (1960).

Al'tschuler, L.V.
"The Isentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures,"
Soviet Physics-JETP 11:766-775 (1960).

Fowles, G.R.
"Shock Wave Compression of Hardened and Annealed 2024 Aluminum,"
J.Appl.Phys. 32:1475-87 (1961).

Curran, D.R.
"Nonhydrodynamic Attenuation of Shock Waves in Aluminum,"
J.Appl.Phys. 34:2677-85 (1963). -SRI-

Lundergan, C.D.
Herrmann, W.
"Equation of State of 6061-T6 Aluminum at Low Pressures,"
J.Appl.Phys. 34:2046-52 (1963). -Sandia- (0-31 kbar.)

Barker, L.M.
Lundergan, C.D.
Herrmann, W.
"Dynamic Response of Aluminum,"
J.Appl.Phys. 35:1203-23 (1964). -Sandia-

Hartman, W.F.
"Determination of Unloading Behavior of Uniaxially Strained 6061-T6 Aluminum from Residual Strain Measurements,"
J.Appl.Phys. 35:2090-6 (1964). -Sandia-

Curran, D.R.
"Residual Strains in Shock-Loaded Aluminum,"
J.Appl.Phys. 36:2591-2 (1965). -Norwegian DRE-

Anderson, G.D.
et al
"Equation of State of Solids: Aluminum and Teflon,"
AFWL-TR-65-147, 58pp, Dec 1965. AD625579.

Morgan, D.T.
et al
"Measurement of the Grueneisen Parameter and the Internal Energy Dependence of the Solid Equation of State for Aluminum and Teflon," AVCO, AFWL-TR-65-117, 128pp, Oct 1965.

Barker, L.M.
Butcher, B.M.
Karnes, C.H.
"Yield-Point Phenomenon in Impact-Loaded 1060 Aluminum,"
J.Appl.Phys. 37:1989-91 (1966). -Sandia-
(The elastic wave shows a peak and an unexpected decrease before arrival of the plastic wave.)

Munson, D.E.
Barker, L.M.
"Dynamically Determined Pressure-Volume Relationships for Aluminum, Copper, and Lead,"
J.Appl.Phys. 37:1652-60 (1966). -Sandia-

3. Aluminum (cont'd)

Asay, J.R.
Guenther, A.H.
"Ultrasonic Studies of 1060 and 6061-T6 Aluminum," J.Appl.Phys. 38:4086-8 (1967). -AFWL-

Erkman, J.O.
Christensen, A.B.
"Attenuation of Shock Waves in Aluminum," J.Appl.Phys. 38:5395-5403 (1967). -SRI-

Holt, D.L.
et al
"The Strain-Rate Dependence of the Flow Stress in Some Aluminum Alloys," ASM Trans. 60:152-9 (1967). -GMTC-

Mader, C.L.
"One-Dimensional Elastic-Plastic Calculations for Aluminum," Los Alamos Sci. Lab. LA-3678, Feb 1967.

McKenna, P.
Pastine, D.J.
"Volume Dependence of the Grüneisen Parameter for Aluminum," J.Appl.Phys. 39:6104 (1968). -NOL-

Bertholf, L.D.
Karnes, C.H.
"Axisymmetric Elastic-Plastic Wave Propagation in 6061-T6 Aluminum Bars of Finite Length," J.Appl.Mech. 36:533-541 (1969). -Sandia-
(End-on impact of two identical aluminum bars is studied experimentally and calculated with the TOODY code.)

Foltz, J.V.
Grace, F.I.
"Theoretical Hugoniot Stress-Temperature-Strain States for Aluminum and Copper," J.Appl.Phys. 40:4195-9 (1969). -NWL-

Fuller, P.J.A.
Price, J.H.
"Dynamic Stress-Strain Release Paths for Aluminum and Magnesium Measured to 200 kb," Brit.J.Appl.Phys. (J.Phys.D), Ser. 2, Vol. 2, 275-286 (1969). -UKAEA-

Fyfe, I.M.
Swift, R.P.
"The Dynamic Plastic Response of Aluminum to Plane Strain Cylindrical Stress Waves," Wash.U., Seattle, AD695703, 77pp, Jul 1969. (Exploding wire in hollow cylinder.)

Ho, P.S.
Ruoff, A.L.
"Pressure Dependence of the Elastic Constants for Aluminum from 77° to 300°K," J.Appl.Phys. 40:3151-6 (1969). -Cornell U.-

Johnson, J.N.
Barker, L.M.
"Dislocation Dynamics and Steady Plastic Wave Profiles in 6061-T6 Aluminum," J.Appl.Phys. 40:4321-34 (1969).

Kusubov, A.S.
van Theil, M.
"Dynamic Yield Strength of 2024-T4 Aluminum at 313 kbar," J.Appl.Phys. 40:893-4 (1969). -LRL-

Kusubov, A.S.
van Theil, M.
"Measurement of Elastic and Plastic Unloading Wave Profiles in 2024-T4 Aluminum Alloy," J.Appl.Phys. 40:3776-80 (1969). -LRL-

3. Aluminum (cont'd)


Chang, H.L.
Horie, Y.
"An Analysis of Plane Shock-Structures in 6061-T6 Aluminum," North Carolina State U. TR-71-1, AD720716, Feb 1971. (Profiles of Johnson & Barker are compared with finite-difference calculations.)

Cohen, L.J.
Berkowitz, H.M.
"Time-Dependent Fracture Criteria for 6061-T6 Aluminum Under Stress-Wave Loading in Uniaxial Strain," Int.J.Fracture Mech. 7:183-196 (1971).

Gauster, W.B.
"Low-Temperature Grüneisen Parameters for Silicon and Aluminum," Phys.Rev.B 4:1288-96 (1971). -Sandia- (Pulsed electron-beam data; 5 to 290°K.)

Jones, O.E.
Neilson, F.W.
Benedick, W.B.
"Dynamic Yield Behavior of Explosively Loaded Metals Determined by a Quartz Transducer Technique," J.Appl.Phys. 33:3224-32 (1962). (Duraluminum, Armco iron, and steels.)

Liddell, W.L.
Steele, R.S.
"Experimentally-Determined Plastic Wave Velocities in Fully-Annealed 1100F Aluminum (Striker Velocity 89 ft/sec to 788 ft/sec)," N. Carolina State U., Raleigh, TR-70-11, AD717328, 32pp, Dec 1970.

Naumann, R.J.
"High Temperature Equation of State for Aluminum," Marshall Space Flight Center, Ala., NASA TN D-5892, 15pp, Aug 1970. (To 5 Mbar and 25,000 K.)

Pastine, D.J.
O'Keeffe, D.J.
"Theoretical Estimates of Elastic Relief Wave Velocities for Metals with Applications to Al and Cu," J.Appl.Phys. 41:2743 (1970). -NOL-

Prater, R.F.
"Hypervelocity Impact--Material Strength Effects on Crater Formation and Shock Propagation in Three Aluminum Alloys," Air Force Materials Lab. AFML-TR-70-295, AD718461, 315pp, Dec 1970. (Alloys are 1100, 6061, and 7075.)

Rosenblatt, M.
"Numerical Calculations of Hypervelocity Impact Crater Formation in Hard and Soft Aluminum Alloys," Shock Hydrodynamics, Inc., AFML-TR-70-254, AD721468, Feb 1971. (Eulerian 2-D STEEP code calculations for 4 and 7 km/sec Al spheres onto 1100-0 and 7075-T6 Al alloys.)

Stevens, A.L.
Tuler, F.R.
"Effect of Shock Precompression on the Dynamic Fracture Strength of 1020 Steel and 6061-T6 Aluminum," J.Appl.Phys. 42:5665-70 (1971). -Sandia-

Suzuki, T.
"Second- and Third-Order Elastic Constants of Aluminum and Lead," Phys.Rev. B 3:4007-14 (1971). -U.Ill.- (Calculations.)

4. Copper


Lazarus, D. "The Variation of the Adiabatic Elastic Constants of KCl, NaCl, CuZn, Cu, and Al with Pressure to 10,000 Bars," Phys.Rev. 76:545-553 (1949).

Overton, W.C.,Jr.
Caffney, J. "Temperature Variation of the Elastic Constants of Cubic Elements. I. Copper," Phys.Rev. 98:969-977 (1955).

Daniels, W.B.
Smith, C.S. "Pressure Derivatives of the Elastic Constants of Copper, Silver, and Gold to 10,000 Bars," Phys.Rev. 111:713-721 (1958).

Erkman, J.O. "Explosively Induced Nonuniform Oblique Shocks," Phys.Fluids 1:535-540 (1958). (Method of characteristics calculations for Al and Cu.)

Erkman, J.O. "Spalling of Aluminum and Copper," Poulter Labs., Stanford Res. Inst. TR 015-59, AD229841, 28pp, Oct 1959.

Allen, W.A.
et al "Fluid Mechanics of Copper," Phys.Fluids 2:329-333 (1959).

Al'tschuler, L.V. "Equation of State for Aluminum, Copper, and Lead in the High Pressure Region," Soviet Physics-JETP 11:573-579 (1960).

Al'tschuler, L.V. "The Isentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures," Soviet Physics-JETP 11:766-775 (1960).

McQueen, R.G.
Marsh, S.P. "Ultimate Yield Strength of Copper," J.Appl.Phys. 32:654-665 (1962).

Prieto, F.E.
Renero, C. "Cohesive Energy of Copper," J.Chem.Phys. 43:1050-55 (1965). (Calculations show volume dependence of Grüneisen parameter to be small.)

Chang, Y.A.
Himmel, L. "Temperature Dependence of the Elastic Constants of Cu, Ag, and Au Above Room Temperature," J.Appl.Phys. 37:3567-72 (1966). -LRL-

Munson, D.E.
Barker, L.M. "Dynamically Determined Pressure-Volume Relationships for Aluminum, Copper, and Lead," J.Appl.Phys. 37:1652-60 (1966). -Sandia-

4. Copper (cont'd)


Boade, R.R. "Compression of Porous Copper by Shock Waves," J.Appl.Phys. 39:5693-5702 (1968). -Sandia-

Foltz, J.V.
Grace, F.I. "Theoretical Hugoniot Stress-Temperature-Strain States for Aluminum and Copper," J.Appl.Phys. 40:4195-9 (1969). -NWL-

Grace, F.I. "Shock-Wave Strengthening of Copper and Nickel," J.Appl.Phys. 40:2649-53 (1969). -NWL-

Jones, C.E.
Mote, J.D. "Shock-Induced Dynamic Yielding in Copper Single Crystals," J.Appl.Phys. 40:4920-8 (1969). -Sandia-

O'Keeffe, D.J. "Accurate Pressure, Volume, Temperature Relations for Copper," J.Geophys.Res. 75:1947-52 (1970). -NOL-

Pastine, D.J.
O'Keeffe, D.J. "Theoretical Estimates of Elastic Relief Wave Velocities for Metals with Applications to Al and Cu," J.Appl.Phys. 41:2743 (1970). -NOL-

Boade, R.R. "Principal Hugoniot, Second-Shock Hugoniot, and Release Behavior of Pressed Copper Powder," J.Appl.Phys. 41:4542-51 (1970). -Sandia-

O'Keeffe, D.J. "Theoretical Determination of the Shock States of Porous Copper," J.Appl Phys. 42:888-9 (1971). -NOL-

## 5. Iron


Al'tshuler, L.V. et al — "Dynamic Compressibility and Equation of State of Iron Under High Pressure," Soviet Physics-JETP 34:606-614 (1958).

Erkman, J.O. — "Smooth Spalls and the Polymorphism of Iron," J.Appl.Phys. 32:939-944 (1961).

Al'tshuler, L.V. — "The Isentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures," Soviet Physics-JETP 11:766-775 (1960).

Ivanov, A.G. Novikov, S.A. — "Rarefaction Shock Waves in Iron and Steel," Soviet Physics-JETP 13:1321-3 (1961).

Jones, O.E. Neilson, F.W. Benedick, W.B. — "Dynamic Yield Behavior of Explosively Loaded Metals Determined by a Quartz Transducer Technique," J.Appl.Phys. 33:3024-32 (1962). (Duraluminum, Armco iron, steels.)

Gandel'man, G.M. — "Quantum-Mechanical Derivation of an Equation of State of Iron," Soviet Physics-JETP 16:94-103 (1963).

Ivanov, A.G. Novikov, S.A. Sinitsyn, V.A. — "Investigation of Elastic-Plastic Waves in Explosively Loaded Iron and Steel," Soviet Physics-Solid State 5:196-202 (1963).

Taylor, J.W. Rice, M.H. — "Elastic-Plastic Properties of Iron," J.Appl.Phys. 34:364-371 (1963). -LASL-

Taylor, G.W. — "Dislocation Dynamics and Dynamic Yielding," J.Appl.Phys. 36:3146-50 (1965). (Elastic-plastic flow in Armco iron at very high strain rates.)

Johnson, J.N. Band, W. — "Investigation of Precursor Decay in Iron by the Artificial Viscosity Method," J.Appl.Phys. 38:1578-85 (1967). -WSU-

Lysne, P.C. Halpin, W.J. — "Shock Compression of Porous Iron in the Region of Incomplete Compaction," J.Appl.Phys. 39:5488-95 (1968). -Sandia-

Butcher, B.M. Karnes, C.H. — "Dynamic Compaction of Porous Iron," J.Appl.Phys. 40:2967-76 (1969). -Sandia-

Naumann, R.J. — "Equation of State for Porous Metals Under Strong Shock Compression," J.Appl.Phys. 42:4945-54 (1971). (Worked out for porous Al, Fe, Cu, Ni, Pb, W.)

Campbell, J.E. Foltz, J.V. — "Theoretical Hugoniot States of Armco Iron in the Elastic-Plastic Stress Region," J.Mech.Phys.Solids 18:427-433 (1970). -NWL- (Between elastic yield point and 131 kb.)

5. Iron (cont'd)


Watson, H.,Jr. "Longitudinal Wave Propagation Tests and the Experimental Determination of the Dynamic Stress-Strain Characteristics of Pure Iron," Int.J.Solids Structures 6:1157-72 (1970). -SMU-

Rotter, C.A.
Smith, C.S. "Ultrasonic Equation of State of Iron. I. Low Pressure, Room Temperature," J.Phys.Chem.Solids 27:267-276 (1966). -Case IT-

Duvall, G.E.
Fowles, G.R.
Horie, Y. "Equations of State in Solids," Wash.St.U. WSU-SDL-67-01, AD669251, 132pp, Feb 1967. (Liquids; phase changes in iron; quartz.)

Lord, A.E.,Jr.
Beshers, D.N. "Elastic Stiffness Coefficients of Iron from 77° to 673°K," J.Appl.Phys. 36:1620-3 (1965). -Brown U.- (Single crystals.)

6. Lead


Naumann, R.J. "Equation of State for Porous Metals Under Strong Shock Compression," J.Appl.Phys. 42:4945-54 (1971). (Worked out for porous Al, Fe, Cu, Ni, Pb, W.)

Pack, D.C.
Evans, W.M.
James, H.J. "The Propagation of Shock Waves in Steel and Lead," Proc.Phys.Soc. 60, Part 1:1-8 (1948).

Al'tshuler, L.V. "Equation of State for Aluminum, Copper, and Lead in the High Pressure Region," Soviet Physics-JETP 11:573-579 (1960).

Al'tshuler, L.V. "The Isentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures," Soviet Physics-JETP 11:766-775 (1960).

Munson, D.E.
Barker, L.M. "Dynamically Determined Pressure-Volume Relationships for Aluminum, Copper, and Lead," J.Appl.Phys. 37:1652-60 (1966). -Sandia-

Suzuki, T. "Second- and Third-Order Elastic Constants of Aluminum and Lead," Phys.Rev. B 3:4007-14 (1971). -U.Ill.- (Calculations.)

7. Steel


Pack, D.C.
Evans, W.M.
James, H.J.
"The Propegation of Shock Waves in Steel and Lead,"
Proc.Phys.Soc. 60, Part 1:1-8 (1948).

Ivanov, A.G.
Novikov, S.A.
"Rarefaction Shock Waves in Iron and Steel,"
Soviet Physics-JETP 13:1321-3 (1961).

Jones, O.E.
Neilson, F.W.
Benedick, W.B.
"Dynamic Yield Behavior of Explosively Loaded Metals Determined by a Quartz Transducer Technique,"
J.Appl.Phys. 33:3224-32 (1962).
(Duraluminum, Armco iron, steels.)

Ivanov, A.G.
Novikov, S.A.
Sinitsyn, V.A.
"Investigation of Elastic-Plastic Waves in Explosively Loaded Iron and Steel,"
Soviet Physics-Solid State 5:196-202 (1963).

Jones, O.E.
Holland, J.R.
"Bauschinger Effect in Explosively Loaded Mild Steel,"
J.Appl.Phys. 35:1771-3 (1964).

Katz, S.
Doran, D.C.
Curran, D.R.
"Hugoniot Equation of State of Aluminum and Steel from Oblique Shock Measurements,"
J.Appl.Phys. 30:568-576 (1959).
(40-180 kbar for Al. Low-carbon steel shows a phase transition.)

Stevens, A.L.
Tuler, F.R.
"Effect of Shock Precompression on the Dynamic Fracture Strength of 1020 Steel and 6061-T6 Aluminum,"
J.Appl.Phys. 42:5665-70 (1971). -Sandia-

8. Tantalum


| | |
|---|---|
| Soga, N. | "Comparison of Measured and Predicted Bulk Moduli of Tantalum and Tungsten at High Temperatures," J.Appl.Phys. 37:3416-20 (1966). -Bell Tel.- (To 500°C.) |
| Chechile, R.A. | "Ultrasonic Equation of State of Tantalum," Case Inst.Tech., Cleveland (for ONR), AD655640, 24pp, May 1967. |
| Rohde, R.W.<br>Towne, T.L. | "Shock-Compression Behavior of Tantalum at 25°C and 900°C," J.Appl.Phys. 42:878-880 (1971). (Experimental Hugoniot data to 80 kbar.) |
| Fateeva, N.S.<br>Vereshchagin, L.F. | "Melting Curve of Tantalum Up To 60 kbars," Soviet Physics-Doklady 16:322-3 (1971). |
| Isbell, W.M.<br>et al | "Measurements of Dynamic Properties of Materials. Volume VI. Tantalum," General Motors Tech.Ctr. MSL-70-23-Vol 6, DASA-2501-6, AD741217, 90pp, Feb 1972. |

## 9. Tungsten


Boade, R.R. — "Dynamic Compression of Porous Tungsten," J.Appl.Phys. 40:3781-5 (1969). -Sandia-

Naumann, R.J. — "Equation of State for Porous Metals Under Strong Shock Compression," J.Appl.Phys. 42:4945-54 (1971). (Worked out for porous Al, Fe, Cu, Ni, Pb, W.)

Jones, A.H.; Isbell, W.M.; Maiden, C.J. — "Measurement of the Very-High-Pressure Properties of Materials Using a Light-Gas Gun," J.Appl.Phys. 37:3493-99 (1966). -GMRDL- (Hugoniot data for Fansteel 77, W, Au to 6 Mbar.)

Soga, N. — "Comparison of Measured and Predicted Bulk Moduli of Tantalum and Tungsten at High Temperatures," J.Appl.Phys. 37:3416-20 (1966). -Bell Tel.- (To 500°C.)

Rohde, R.W. — "Equation of State of Shock-Loaded Tungsten at 950°C," J.Appl.Phys. 40:2988-93 (1969). -Sandia-

Krupnikov, K.K.; Brazhnik, M.L.; Krupnikova, V.P. — "Shock Compression of Porous Tungsten," Soviet Physics-JETP 15:470-6 (1962). (Experiments to about 4 Mbar.)

Lowrie, R.; Gonas, A.M. — "Dynamic Elastic Properties of Polycrystalline Tungsten, 24°-1800°C," J.Appl.Phys. 36:2189-92 (1965). (Ultrasonic pulse-echo measurements.)

D. Porous Materials


Linde, R.K.
Schmidt, D.N.
"Shock Propagation in Nonreactive Porous Solids,"
J.Appl.Phys. 37:3259-71 (1966). -SRI-

Anderson, G.D.
et al
"Investigation of Equation of State of Porous Earth Media,"
AFWL-TR-65-146, AD628803, 172pp, Feb 1966.

Hofmann, R.
Andrews, D.J.
Maxwell, D.E.
"Computed Shock Response of Porous Aluminum,"
J.Appl.Phys. 39(10):4555-62 (1968).

Lysne, P.C.
Halpin, W.J.
"Shock Compression of Porous Iron in the Region of Incomplete Compaction,"
J.Appl.Phys. 39(12):5488-95 (1968). -Sandia-

Boade, R.R.
"Compression of Porous Copper by Shock Waves,"
J.Appl.Phys. 39(12):5693-5702 (1968). -Sandia-

Herrmann, W.
"Equation of State of Crushable Distended Materials,"
Sandia Labs. SC-RR-66-2678, 74pp, Mar 1968.

Herrmann, W.
"Constitutive Equation for the Dynamic Compaction of Ductile Porous Materials,"
J.Appl.Phys. 40(6):2490-99 (1969). -Sandia-

Butcher, B.M.
Karnes, C.H.
"Dynamic Compaction of Porous Iron,"
J.Appl.Phys. 40(7):2967-76 (1969). -Sandia-

D. Porous Materials (cont'd)


Lysne, P.C. — "Low-Stress Shock and Release Wave Behavior of Porous Carbon," J.Appl.Phys. 41(1):351-360 (1970). -Sandia Labs.- (Below 25 kbar.)

Pastine, D.J. et al — "Theoretical Shock Properties of Porous Aluminum," J.Appl.Phys. 41(7):3144-47 (1970). -NOL-

Lee, L.M. et al — "Some Dynamic Mechanical Properties of Distended Carbons," AIAA J. 8(8):1421-28 (1970). -Sandia Labs.-

Boade, R.R. — "Principal Hugoniot, Second-Shock Hugoniot, and Release Behavior of Pressed Copper Powder," J.Appl.Phys. 41:4542-51 (1970). -Sandia Labs.-

McQueen, R.G. Carter, W.J. — "Equation of State of Low-Density Carbon," LASL LA-4340, AD702446, 6pp, Mar 1970. (Experiments.)

O'Keeffe, D.J. — "Theoretical Determination of the Shock States of Porous Copper," J.Appl.Phys. 42:888-9 (1971). -NOL-

Walsh, J.B. — "First Pressure Derivative of Bulk Modulus for Porous Materials," J.Appl.Phys. 42:1098-100 (1971).

Lysne, P.C. — "Determination of High-Pressure Equations of State by Shock-Loading Porous Specimens," J.Appl.Phys. 42:2152-3 (1971).

Butcher, B.M. — "Numerical Techniques for One-Dimensional Rate-Dependent Porous Material Compaction Calculations," Sandia Labs. SC-RR-710112, 61pp, Apr 1971. (Subroutine for WONDY code.)

Naumann, R.J. — "Equation of State for Porous Metals Under Strong Shock Compression," J.Appl.Phys. 42(12):4945-54 (1971). (Worked out for porous Al, Fe, Cu, Ni, Pb, W.)

Davison, L. — "Shock-Wave Structure in Porous Solids," J.Appl.Phys. 42:5503-12 (1971). -Sandia- (Theory of dynamic compression of porous solids.)

Kormer, S.B. Funtikov, A.I. Urlin, V.D. Kolesnikova, A.N. — "Dynamic Compression of Porous Metals and the Equation of State with Variable Specific Heat at High Temperatures," Soviet Physics-JETP 15:477-488 (1962).

Payton, R.G. — "Shock-Wave Propagation in Solid and Compactible Media," J.Acous.Soc.Am. 35:525-534 (1963).

D. Porous Materials (cont'd)

Boade, R.R. "Shock Compression of Foamed Graphite," J.Appl.Phys. 39:1609-17 (1968). -Sandia- (To 190 kbar.)

Mader, C.L.
Carter, W.J. "An Equation of State for Shocked Polyurethane Foam," Los Alamos Sci.Lab. LA-4059, 51pp, Nov 1968. (Experimental data can be reproduced if foam decomposes to a BKW equation of state.)

Krupnikov, K.K.
Brazhnik, M.L.
Krupnikova, V.P. "Shock Compression of Porous Tungsten," Soviet Physics-JETP 15:470-6 (1962). (Experiments to about 4 Mbar.)

Carroll, M.
Holt, A.C. "Suggested Modification of the P-$\alpha$ Model for Porous Materials," J.Appl.Phys. 43:759-761 (1972). -LRL- (Suggests that the pressure is the average matrix pressure divided by the ratio of specific volumes of the porous and the matrix material.)

Harris, P. "The Grüneisen Constant of Porous Materials in Energy Deposition Experiments," Picatinny Arsenal Tech.Rept. 4255, 24pp, Aug 1971. (Stress relief occurs while the energy is being deposited.)

Biot, M.A. "Theory of Elasticity and Consolidation for a Porous Anisotropic Solid," J.Appl.Phys. 26:182-5 (1955).

Carroll, M.
Holt, A.C. "Static and Dynamic Pore-Collapse Relations for Ductile Porous Materials," J.Appl.Phys. 43:1626-36 (1972).

Cowin, S.C. "Thermodynamic Model for Porous Materials with Vacuous Pores," J.Appl.Phys. 43:2495-7 (1972). -Tulane U.-

Vinh Tuong, M. "Sur la determination des constantes élastiques des plaques de matériau composite anisotrope renforcé de fibres unidirectionnelles," Compt.Rend.Acad.Sc.Paris 270A:1440-3 (1970).

Zimmer, J.E.
Cost, J.R. "Determination of the Elastic Constants of a Unidirectional Fiber Composite Using Ultrasonic Velocity Measurements," J.Acoust.Soc.Am. 47:795-803 (1970). (Glass-reinforced epoxy-fiber composite.)

Linde, R.K.
Seaman, L.
Schmidt, D.N. "Shock Response of Porous Copper, Iron, Tungsten, and Polyurethane," J.Appl.Phys. 43:3367-75 (1972). (Experiments with light-gas gun.)

E. Non-Metals
1. Miscellaneous Non-Metals

The material names are underlined to make scanning easier.

Breed, B.R.
Venable, D.
"Dynamic Observations of the Course of a Shock-Induced Polymorphic Phase Transition in Antimony," J.Appl.Phys. 39:3222-4 (1968). -LASL-

Coleburn, N.L.
Forbes, J.W.
"Irreversible Transformation of Hexagonal Boron Nitride by Shock Compression," J.Chem.Phys. 48:555-9 (1968).

Sirdeshmukh, D.B.
"The Grüneisen Parameters of Some II-IV Compounds," J.Appl.Phys. 39:349-350 (1968). -Osmania U.- (ZnO, BaO, ZnS, and CdS.)

Wasley, R.J.
Walker, F.E.
"Dynamic Compressive Behavior of a Strain-Rate Sensitive, Polycrystalline, Organic Solid," J.Appl.Phys. 40:2639-48 (1969). -IRL-

Barker, L.M.
Hollenbach, R.E.
"Shock-Wave Studies of PMMA, Fused Silica, and Sapphire," J.Appl.Phys. 41:4208-26 (1970).

Brody, P.S.
"Shock-Induced Transition in Barium Titanate," Harry Diamond Labs. HDL-TR-1476, AD717551, 27pp, Sep 1970.

Valiev, A.A.
Nikanorov, S.P.
Stepanov, A.V.
"Temperature Dependence of the Elastic Constants of Tellurium," Soviet Physics-Solid State 12:1312-16 (1970). (Te apparently consists of spiral chains.)

Graham, R.A.
"Linear Bulk Modulus Approximation for Sapphire," J.Geophys.Res. 76:4908-12 (1971). -Sandia-

Gibbons, D.F.
"Thermal Expansion of Some Crystals with the Diamond Structure," Phys.Rev. 112:136-140 (1958). (Si, Ge, indium antimonide.)

Morse, G.E.
Lawson, A.W.
"The Temperature and Pressure Dependence of the Elastic Constants of Thallium Bromide," J.Phys.Chem.Solids 28:939-950 (1967). (4.2°K to 700°K and to 5 kbar.)

1. Miscellaneous Non-Metals (cont'd)

Drabble, J.R.
Brammer, A.J.
"The Third-Order Elastic Constants of Indium Antimonide," Proc.Phys.Soc. 91:959-964 (1967).

Perez-Albuerne, E.A.
Drickamer, H.G.
"Effect of High Pressures on the Compressibilities of Seven Crystals Having the NaCl or CsCl Structure," J.Chem.Phys. 43:1381-7 (1965). -U.Ill.-
(NaCl, KCl, CsCl, MgO, CaO, CaS, TlI.)

Giardini, A.A.
Samara, G.A.
"The Compressibility of Bismuth and Its Upper Transition Pressure," J.Phys.Chem.Solids 26: 1523-8 (1965). -USAEL-

Jeffery, R.N.
et al
"Pressure Calibration to 100 kbar Based on the Compression of NaCl," J.Appl.Phys. 37:3172-80 (1966). -BYU-
(Measurements of the Ba and Bi transitions used as calibration points in high-pressure work.)

Blum, F.A.,Jr.
Deaton, B.C.
"Properties of the Group VI B Elements under Pressure. II. Semiconductor-to-Metal Transition of Tellurium," Phys.Rev. 137:A1410-7 (1965).
(Pressures to 60 kbar; temperatures to 600°C.)

Deaton, B.C.
Blum, F.A.,Jr.
"Properties of Group VI B Elements Under Pressure. I. Melting Curves of S, Se, and Te," Phys.Rev. 137:A1131-8 (1965). (To 45 kbar.)

McSkimin, H.J.
Andreatch, P.,Jr.
"Elastic Moduli of Diamond as a Function of Pressure and Temperature," J.Appl.Phys. 43:2944-8 (1972).
(To 20,000 psi at 25°C; -195.8 to 50°C at 1 atm.)

Ramachandran, V.
Srinivasan, R.
"Generalized Grüneisen Parameters of Elastic Waves in Calcite and Its Thermal Expansion," J.Phys.Chem.Solids 33:1921-6 (1972). (Theory.)

2. Alkali Halides


Lazarus, D. — "The Variation of the Adaiabatic Elastic Constants of KCl, NaCl, CuZn, Cu, and Al with Pressure to 10,000 Bars," Phys.Rev. 76:545-553 (1949).

Al'tshuler, V.L. et al — "Investigation of Alkali-Metal Halides at High Pressures and Temperatures Produced by Shock Compression," Soviet Physics-Solid State 5:203-211 (1963).

Decker, D.L. — "Equation of State of NaCl and Its Use as a Pressure Gauge in High-Pressure Research," J.Appl.Phys. 36:157-161 (1965). -Brigham Young U.- (Calculations.)

Decker, D.L. — "Equation of State of Sodium Chloride," J.Appl.Phys. 37:5012-14 (1966). -Brigham Young U.- (Table to 500 kbar and 0°C to melting point.)

Bassett, W.A. — "Pressure-Induced Phase Transformation in NaCl," J.Appl.Phys. 39:319-325 (1968). -SRI-

Ruppin, R. Roberts, R.W. — "Grüneisen Parameters of the Alkali Halides," Phys.Rev. B3:1406-10 (1971). -UNC- (Calculations.)

Weidner, D.J. Simmons, G. — "Elastic Properties of Alpha Quartz and the Alkali Halides Based on an Interatomic Force Model," J.Geophys.Res. 77:826-847 (1972). -MIT-

Demarest, H.H.,Jr. — "Extrapolation of Elastic Properties to High Pressure in the Alkali Halides," J.Geophys.Res. 77:848-856 (1972).

Hauver, G.E. Melani, A. — "The Shock Hugoniot of Single-Crystal Lithium Fluoride," Ballistic Res.Labs. BRL-MR-2058, AD712320, 18pp, Aug 1970. (160 to 880 kbar; phase transition near 420 kbar.)

Ghafelehbashi, M. Dandekar, D.P. Ruoff, A.L. — "Pressure and Temperature Dependence of the Elastic Constants of RbCl, RbBr, and PbI," J.Appl.Phys. 41:652-666 (1970). -Cornell U.- (P to 4 kbar; T from 120 to 300°K.)

Roberts, R.W. Smith, C.S. — "Ultrasonic Parameters in the Born Model of the Sodium and Potassium Halides," J.Phys.Chem.Solids 31:619-634 (1970). -CWRU-

Drabble, J.R. Strathen, R.E.B. — "The Third-Order Elastic Constants of Potassium Chloride, Sodium Chloride and Lithium Fluoride," Proc.Phys.Soc. 92:1090-5 (1967). -U.Exeter-

2. Alkali Halides (cont'd)


Miller, R.A.
Smith, C.S.
"Pressure Derivatives of the Elastic Constants of LiF and NaF," J.Phys.Chem.Solids 25:1279-92 (1964).

Ghate, P.B.
"Third-Order Elastic Constants of Alkali Halide Crystals," Phys.Rev. 139:A1666-74 (1965).

Voronov, F.F.
Goncharova, V.A.
"Influence of Pressure up to 20 kbar on the Elastic Properties of Rubidium Chloride and Iodide," Soviet Physics-JETP 23:777-784 (1966).

Lincoln, R.C.
Koliwad, K.M.
Ghate, P.B.
"Elastic Constants of Some NaCl Type Alkali Halides," Phys.Stat.Solidi 18:265-277 (1966). -Cornell U.
(Born model calculations for NaCl, NaBr, KF, KCl, KBr, and RbBr.)

Koliwad, K.M.
Ghate, P.B.
Ruoff, A.L.
"Pressure Derivatives of the Elastic Constants of NaBr and KF," Phys.Stat.Solidi 21:507-516 (1967).
(Ultrasonic measurements.)

Bartels, R.A.
Schuele, D.E.
"Pressure Derivatives of the Elastic Constants of NaCl and KCl at 295°K and 195°K," J.Phys.Chem.Solids 26:537-549 (1965). -Case I.T.-

Huntington, H.B.
"Ultrasonic Measurements on Single Crystals," Phys.Rev. 72:321-331 (1947). -MIT-
(Acoustic velocity and attenuation for Rochelle salt and LiF, NaCl, KBr, and KI.)

Ruppin, R.
"Grüneisen Parameters of the Lithium Halides," J.Phys.Chem.Solids 33:945-9 (1972).
(Calculations from lattice dynamics.)

Achar, B.N.N.
Barsch, G.R.
"Thermal Expansion of Rocksalt," Phys.Rev. B 3:4352-60 (1971).
(Calculation with 6-parameter shell model.)

Nanjoshi, K.V.
Mitra, S.S.
Vetelino, J.F.
"Simple Shell-Model Calculation of Lattice Dynamics and Thermal Expansion of Alkali Halides," Phys.Rev. B 3:4398-4403 (1971).

Vetelino, J.F.
Mitra, S.S.
Nanjoshi, K.V.
"Lattice Dynamics, Mode Grüneisen Parameters, and Coefficient of Thermal Expansion of CsCl, CsBr, and CsI," Phys.Rev. B 2:2167-75 (1970).

2. Alkali Halides (cont'd)


Korner, S.B. et al — "Experimental Determination of Temperature in Shock-Compressed NaCl and KCl and of Their Melting Curves at Pressures up to 700 kbar," Soviet Physics-JETP 21:689-700 (1965).

Korner, S.B. et al — "Investigation of the Compressibility of Five Ionic Compounds at Pressures up to 5 Mbar," Soviet Physics-JETP 20:811-819 (1965). (LiF, NaCl, KCl, KBr, and CsBr.)

Decker, D.L. Worlton, T.G. — "Compression of NaCl and CsCl to 32 kbar," J.Appl.Phys. 43:4799-4800 (1972). -ANL- (Piston apparatus with time-of-flight neutron diffraction technique for measuring the lattice specings.)

Spetzler, H. et al — "Equation of State of NaCl: Ultrasonic Measurements to 8 kbar and 800°C and Static Lattice Theory," J.Phys.Chem.Solids 33:1727-50 (1972). -Sandia-

3. Carbon


Beade, R.R. "Shock Compression of Foamed Graphite," J.Appl.Phys. 39:1609-17 (1968). -Sandia- (Densities 0.55-0.68 g/cc; stresses to 190 kbar.)

Lysne, P.C. "Low-Stress Shock and Release Wave Behavior of Porous Carbon," J.Appl.Phys. 41:351-360 (1970). -Sandia- (Below 25 kbar.)

Lee, L.M.
May, R.P.
Guess, T.R. "Some Dynamic Mechanical Properties of Distended Carbons," AIAA J. 8:1421-8 (1970). -Sandia- (Includes equation of state to 235 kbar.)

McQueen, R.G.
Carter, W.J. "Equation of State of Low-Density Carbon," LASL LA-4340, AD702446, 6pp, Mar 1970. (Experiments.)

Doran, D.G. "Hugoniot Equation of State of Pyrolytic Graphite to 300 kbars," J.Appl.Phys. 34:844-851 (1963). -SRI-

Coleburn, N.L. "Compressibility of Pyrolytic Graphite," J.Chem.Phys. 40:71-77 (1964). -NOL-

Zavitsanos, P.D. "The Vaporization of Pyrolytic Graphite," GE Space Sci.Lab. R66SD31, Reprint No. 420, 34pp, May 1966.

Fischbach, D.B.
Kotlensky, W.V. "On the Mechanisms of High-Temperature Plastic Deformation in Pyrolytic Carbons," Electrochem. Technology 5:207-213, May-Jun 1967.

Blakslee, O.L.
et al "Elastic Constants of Compression-Annealed Pyrolytic Graphite," J.Appl.Phys. 41:3373-82 (1970). -Union Carbide-

Papadakis, E.P.
Bernstein, H. "Elastic Moduli of Pyrolytic Graphite," J.Acous.Soc.Am. 35:521-4 (1963).

4. Germanium

Graham, R.A.
Jones, C.E.
Holland, J.R.
"Shock-Wave Compression of Germanium from 20 to 140 kbar,"
J.Appl.Phys. 36:3955-56 (1965). -Sandia-

Carr, R.H.
McCammon, R.D.
White, G.K.
"Thermal Expansion of Germanium and Silicon at Low Temperatures,"
Phil.Mag. 12:157-163 (1965).

Graham, R.A.
Jones, O.E.
Holland, J.R.
"Physical Behavior of Germanium Under Shock Wave Compression,"
J.Phys.Chem.Solids 27:1519-29 (1966). -Sandia-

Mason, W.P.
Bateman, T.B.
"Ultrasonic-Wave Propagation in Pure Silicon and Germanium,"
J.Acoust.Soc.Am. 36:644-652 (1964). -Bell Tel.-

McSkimin, H.J.
"Elastic Moduli of Single Crystal Germanium as a Function of Hydrostatic Pressure,"
J.Acoust.Soc.Am. 30:314-318 (1958). -Bell Tel.-
(To 50 kpsi; 0-75°C; ultrasonic measurements.)

Bundy, F.P.
"Phase Diagrams of Silicon and Germanium to 200 kbar, 1000°C," J.Chem.Phys. 41:3809-14 (1964).
(Belt apparatus; resistance measured.)

5. Glass

Gibbons, R.V.
Ahrens, T.J. "Shock Metamorphism of Silicate Glasses," J.Geophys.Res. 76:5489-98 (1971). (Refractive index changes are measured for tektite, soda-lime, and silica glasses shock loaded to as high as 460 kbar.)

Davit, J. "Mechanism for Laser Surface Damage of Glasses," J.Appl.Phys. 39:6052-6 (1968). -France-

Gross, B. "Irradiation Effects in Borosilicate Glass," Phys.Rev. 107:368-373 (1957).

6. Oxides


Wachtman, J.B.,Jr. "Exponential Temperature Dependence of Young's Modulus for Several Oxides," Phys.Rev. 122:1754-9 (1961). ($Al_2O_3$, MgO and $ThO_2$.)

Anderson, O.L.
Nafe, J.E. "The Bulk Modulus-Volume Relationship for Oxide Compounds and Related Geophysical Problems," J.Geophys.Res. 70:3951-63 (1965). -Bell Tel.-

Anderson, O.L. "Derivation of Wachtman's Equation for the Temperature Dependence of Elastic Moduli of Oxide Compounds," Phys.Rev. 144:553-7 (1966). -Bell Tel.-

White, G.K.
Anderson, O.L. "Grüneisen Parameter of Magnesium Oxide," J.Appl.Phys. 37:430-2 (1966). -Bell Tel.-

Ahrens, T.J.
Gust, W.H.
Royce, E.B. "Material Strength Effects in the Shock Compression of Alumina," J.Appl.Phys. 39:4610-16 (1968). -SRI-

Sirdeshmukh, D.B. "The Grüneisen Parameters of Some II-IV Compounds," J.Appl.Phys. 39:349-350 (1968). -Osmania U.- (ZnO, BaO, ZnS, and CdS.)

Anderson, D.L.
Anderson, O.L. "The Bulk Modulus-Volume Relationship for Oxides," J.Geophys.Res. 75:3494-3500 (1970). -CIT- ("The relationship $KV_o$=constant is shown to hold oxides as well as for alkali halides.")

Spetzler, H. "Equation of State of Polycrystalline and Single-Crystal MgO to 8 kilobars and 800°K," J.Geophys.Res. 75:2073-87 (1970). -CIT-

Notis, M.R.
Spriggs, R.M.
Hahn, W.C.,Jr. "Elastic Moduli of Pressure-Sintered Nickel Oxide," J.Geophys.Res. 76:7052-61 (1971). -Lehigh U.- (Three techniques: resonant sphere, 3-part composite oscillator, pulse-transmission.)

Kirby, R.K. "Thermal Expansion of Rutile from 100 to 700°K," J.Res.Nat.Bureau Stds. 71A:363-9 (1967). (Rutile is $TiO_2$. The expansion deviates from the Grüneisen relation; separate optical and acoustical contributions are considered.)

Simmons, G.
England, A.W. "Universal Equations of State for Oxides and Silicates," Phys.Earth Planet.Interiors 2:69-76 (1969). (Several equations of state are compared with experimental data; none appear to have general validity.)

6. Oxides (cont'd)

Anderson, O.L.
Andreatch, P.,Jr.
"Pressure Derivatives of Elastic Constants of Single-Crystal MgO at 23° and -195.8°C,"
J.Am.Ceramic Soc. 49:404-? (1966). -Bell Tel.-

7. Polymers


Zel'dovich, Ia.B.
Kormer, S.B.
Sinitsyn, M.V.
Kuriapin, A.I.
"Temperature and Specific Heat of Plexiglas Under Shock Wave Compression," Soviet Physics-Doklady 3:938-9 (1958).

Keller, D.V.
Trulio, J.G.
"Mechanism of Spall in Lucite," J.Appl.Phys. 34:172-5 (1963).

Anderson, G.D.
et al
"Equation of State of Solids: Aluminum and Teflon," AFWL-TR-65-147, 58pp, Dec 1965.

Mills, E.J.
"Hugoniot Equations of State for Plastics: A Comparison," AIAA J. 3:742-3 (1965). -BMI-

Morgan, D.T.
et al
"Measurement of the Grüneisen Parameter and the Internal Energy Dependence of the Solid Equation of State for Aluminum and Teflon," AVCO, AFWL-TR-65-117, 128pp, AD624320, Oct 1965.

Pastine, D.J.
"P, v, T Equation of State for Polyethylene," J.Chem.Phys. 49:3012-22 (1968). -NOL-

Shen, M.
Hansen, W.N.
Romo, P.C.
"Thermal Expansion of the Polyethylene Unit Cell," J.Chem.Phys. 51:425-430 (1969). (10-300°K)

Asay, J.R.
Lamberson, D.L.
Guenther, A.H.
"Pressure and Temperature Dependence of the Acoustic Velocities in Polymethylmethacrylate," J.Appl.Phys. 40:1768-83 (1969). -AFWL- (Ultrasonic pulse-echo technique; 22-75°C; 1 atm and 150 kpsi.)

Wu, C.K.
Jura, G.
Shen, M.
"Grüneisen Parameters of Crystalline Polyethylene," J.Appl.Phys. 43:4348-53 (1972). (Reported values disagree widely. The interrelations between the various definitions and experimental values are clarified.)

7. Polymers (cont'd)


Wada, Y. et al — "Grüneisen Constant and Thermal Properties of Crystalline and Glassy Polymers," J.Polymer Science, Pt A-2, 7:201-8 (1969). -U.Tokyo-

Barker, L.M. Hollenbach, R.E. — "Shock-Wave Studies of PMMA, Fused Silica, and Sapphire," J.Appl.Phys. 41:4208-26 (1970). -Sandia-

Pastine, D.J. — "Volume Dependence of the Thermal Expansion of Polymers," J.Appl.Phys. 41:5085-7 (1970).

Quach, T. Simha, R. — "Pressure-Volume-Temperature Properties and Transitions of Amorphous Polymers: Polystyrene and Poly(orthomethylstyrene)," J.Appl.Phys. 42:4592-4606 (1971). -CWRU- (P from 1-1000 bar; T from 0 to 200°C.)

Champion, A.R. — "Shock Compression of Teflon from 2.5 to 25 kbar—Evidence for a Shock-Induced Transition," J.Appl.Phys. 42:5665-70 (1971). -Sandia-

Broadhurst, M.G. Mopsik, F.I. — "Normal Mode Calculation of Grüneisen Thermal Expansion in n-Alkanes," J.Chem.Phys. 54:4239-46 (1971). -NBS-

Lamberson, D.L. Asay, J.R. Guenther, A.H. — "Equation of State of Polystyrene and Polymethylmethacrylate from Ultrasonic Measurements at Moderate Pressures," J.Appl.Phys. 43:976-985 (1972). -AFWL- (Hydrostatic pressures to 10 kbar.)

Munson, D.E. May, R.P. — "Dynamically Determined High-Pressure Compressibilities of Three Epoxy Resin Systems," J.Appl.Phys. 43:962-971 (1972). -Sandia- (1.4 to 188 kbar; linear $U_s$ vs $u_p$ fit is given.)

Warfield, R.W. Hartmann, B. — "Bulk Modulus of Polyethylene Oxide," Naval Ordnance Laboratory NOLTR 71-208, Jan 1972.

Barker, R.E.,Jr. — "Grüneisen Numbers for Polymeric Solids," J.Appl.Phys. 38:4234-42 (1967). -GERDC- (Theoretical.)

Davies, F.W. — "Hugoniot Equation of State of Mylar," Boeing D2-125304-1, AD718398, 12pp, Mar 1969.

Edwards, D.J. Erkman, J.O. — "The Electromagnetic Velocity Gage and Applications to the Measurement of Particle Velocity in PMMA," Naval Ordnance Lab. NOLTR-70-79, AD717346, 48pp, Jul 1970.

8. Quartz and Silica

Wackerle, J. "Shock-Wave Compression of Quartz," J.Appl.Phys. 33:922-937 (1962). (To 750 k. r.)

Graham, R.A.
Neilson, F.W.
Benedick, W.B. "Piezoelectric Current from Shock-Loaded Quartz— A Submicrosecond Stress Gauge," J.Appl.Phys. 36:1775-83 (1965). (A quartz disk is impacted by another quartz disk. Stresses up to 50 kbar are measured.)

Duvall, G.E.
Fowles, G.R.
Horie, Y. "Equations of State in Solids," Wash.St.U. WSU-SDL-67-01, AD669251, 132pp, Feb 1967. (Liquids; phase changes in iron; quartz.)

Barker, L.M.
Hollenbach, R.E. "Shock-Wave Studies of PMMA, Fused Silica, and Sapphire," J.Appl.Phys. 41:4208-26 (1970).

Powell, B.E.
Skove, M.J. "Combinations of Fourth-Order Elastic Constents of Fused Quartz," J.Appl.Phys. 41:4913-17 (1970).

McSkimin, H.J.
Andreatch, P.,Jr.
Thurston, R.N. "Elastic Moduli of Quartz versus Hydrostatic Pressure at 25° and -195.8°C," J.Appl.Phys. 36:1624-32 (1965). (Ultrasonic data; pressures to 30,000 psi.)

Graham, R.A.
Ingram, G.E. "Piezoelectric Current from x-Cut Quartz Subjected to Short-Duration Shock-Wave Loading," J.Appl.Phys. 43:826-835 (1972). -Sandia- (Shock-induced conductivity can cause spurious responses for some combinations of stress level and pulse duration.)

Fraser, D.B. "Factors Influencing the Acoustic Properties of Vitreous Silica," J.Appl.Phys. 39:5868-78 (1968). -Bell Tel.-

Julian, C.L.
Lane, F.O.,Jr. "Calculation of the Elastic Constants of Alpha Quartz from a Model," J.Appl.Phys. 39:3931-2 (1968). -Sandia-

Elcombe, M.M. "Some Aspects of the Lattice Dynamics of Quartz," Proc.Phys.Soc. 91:947-958 (1967). -Edinburgh U.-

McWhan, D.B. "Linear Compression of $\alpha$-Quartz to 150 kbar," J.Appl.Phys. 38:347-352 (1967). -Bell Tel.- (X-ray diffraction pressure vs volume measurements.)

Weidner, D.J.
Simmons, G. "Elastic Properties of Alpha Quartz and the Alkali Halides Based on an Interatomic Force Model," J.Geophys.Res. 77:826-847 (1972). -MIT-

9. Rocks and Soils (before 1967)

McQueen, R.G.
Fritz, J.N.
Marsh, S.P.
"On the Composition of the Earth's Interior,"
J.Geophys.Res. 69:2947-65 (1964). -LASL-

Fugelso, L.E.
"Close-In Effects From a Surface Burst,"
AFWL-TR-64-113, 154pp, AD619969, Aug 1965.
(A 2-D elastic-plastic code is developed.)

Ahrens, T.J.
Duvall, G.E.
"Stress Relaxation Behind Elastic Shock Waves in Rocks,"
J.Geophys.Res. 71:4349-60 (1966). -SRI-

Holzer, F.
"Calculation of Seismic Source Mechanisms,"
Proc.Roy.Soc.London A290:408-429 (1966).
(One-dimensional computer code calculations of underground nuclear explosions.)

Anderson, G.D.
et al
"Investigation of Equation of State of Porous Earth Media,"
AFWL-TR-65-146, AD628803, 172pp, Feb 1966.

Butkovich, T.R.
"Calculation of the Shock Wave from an Underground Nuclear Explosion in Granite,"
J.Geophys.Res. 70:885-892 (1965). -IRL-
(New SOC computer code is used.)

Holzer, F.
"Measurements and Calculations of Peak Shock-Wave Parameters from Underground Nuclear Detonations,"
J.Geophys.Res. 70:893-905 (1965). -IRL-
(Results from several explosions are given. The calculations use the SOC code.)

9. Rocks and Soils (before 1967, cont'd)


Simmons, G. "Ultrasonics in Geology," Proc. IEEE 53:1337-45 (1965), 140 refs. (Determining elastic properties of rocks and minerals.)

Simmons, G. "Velocity of Compressional Waves in Various Minerals at Pressures to 10 Kilobars," J.Geophys.Res. 69:1117-21 (1964).

Simmons, G. "Velocity of Shear Waves in Rocks to 10 Kilobars, 1," J.Geophys.Res. 69:1123-30 (1964).

Birch, F. "The Velocity of Compressional Waves in Rocks to 10 Kilobars, Part 2," J.Geophys.Res. 66:2199-2224 (1961), 92 refs.

Birch, F. "The Velocity of Compressional Waves in Rocks to 10 Kilobars, Part 1," J.Geophys.Res. 65:1083-1102 (1960), 52 refs.

Birch, F. "Some Geophysical Applications of High-Pressure Research," pp 137-162 of W. Paul & D.M. Warschauer (eds.), Solids Under Pressure (McGraw-Hill, N.Y., 1963).

Chadwick, P.
Cox, A.D.
Hopkins, H.G. "Mechanics of Deep Underground Explosions," Phil.Trans.Roy.Soc. 256A:235-300 (1964).

9. Rocks and Soils (cont'd; 1967)

McQueen, R.G.
Marsh, S.P.
Fritz, J.N.
"Hugoniot Equation of State of Twelve Rocks," J.Geophys.Res. 72(20):4999-5036 (1967). -LASL-

Anon
"Proceedings: DASA Ground Shock Calculation Meeting (at Rand Corp., Oct 1965)," DASA Info. & Analysis Center, DASA-1767 Rev., AD659324, 349pp, Sep 1967.

Zaccor, J.V.
"Procedures for Prediction of Ground Shock Phenomena Based on One-Dimensional Shock Propagation Considerations: Procedures and Applications," URS Corp., Burlingame, Calif., URS-668-10, AD664121, 133pp, Apr 1967.

9. Rocks and Soils (cont'd; 1968)

Anderson, D.L.
Kanamori, H. "Shock-Wave Equations of State for Rocks and Minerals," J.Geophys.Res. 73(20):6477-6502 (1968). -CIT-

French, B.M.
Short, N.M. (eds.) Shock Metamorphism of Natural Materials (Mono Book Corp., Baltimore, 1968).

Anderson, G.D. "The Equation of State of Ice and Composite Frozen Soil Material," Stanford Res. Inst., CRREL RR-257, AD674248, 61pp, Jun 1968.

9. Rocks and Soils (cont'd; 1969)

Ahrens, T.J.
Petersen, C.F.
Rosenberg, J.T.
"Shock Compression of Feldspars,"
J.Geophys.Res. 74:2727 (1969). -CIT-
(Oligoclase and microcline to 670 and 580 kbar.)

Anderson, D.L.
"Bulk Modulus-Density Systematics,"
J.Geophys.Res. 74:3857-63 (1969). -CIT-

Higgins, G.H.
"Response of Rocks to Stress," in H.Mark & S.Fernbach (eds),
Properties of Matter Under Unusual Conditions
(Interscience, N.Y., 1969) pp 43-71. -LRL-

Christensen, D.
"ELK 40: Prediction Calculations of Ground Motion for Distant Plain, Event 6," Physics Int'l Co., DASA-2471, AD707802, 89pp, Dec 1969.
(ELK code calculations of cratering from 100-ton TNT sphere tangent to ground surface.)

Dennen, R.S.
"Shock-Tube-Driven Impact Experiments on Solids,"
J.Appl.Phys. 40(8):3326-33 (1969). -IITRI-
(Hugoniot equation of state of granite.)

Wang, C.-Y.
"Equation of State of Periclase and Some of Its Geophysical Implications," J.Geophys.Res. 74:1451-7 (1969).
(Periclase may be a major component of the earth's lower mantle. Available ultrasonic and shock-wave data are examined; several fits are made to the shock velocity vs particle velocity. The present p-density and u-density data are adequate for geophysical purposes.)

9. Rocks and Soils (cont'd; 1970)

| | |
|---|---|
| Peterson, C.F.<br>Murri, W.J.<br>Coupertheuite, M. | "Hugoniot and Release-Adiabat Measurements for Selected Geologic Materials," J.Geophys.Res. 75(11):2063-72 (1970). (Playa alluvium, tonalite, and novaculite to 50 kbar.) |
| Brace, W.F. | "Static Uniaxial Strain Behavior of 15 Rocks to 30 kbar," MIT, DASA-2561, AD717368, 43pp, Nov 1970. |
| Ahrens, T.J.<br>Anderson, D.L. | "Evaluation of Equation of State Data," Calif. Inst. Tech., DASA-2359, AD700916, 45pp, Jan 1970. (Rocks and minerals.) |
| Riney, T.D.<br>Garg, S.K.<br>Kirsch, J.W. | "Stress Wave Effects in Inhomogeneous and Porous Earth Materials," Systems, Science & Software 3SR-267, DASA-2498, AD712852, Mar 1970. |

9. Rocks and Soils (cont'd; 1971)

Ahrens, T.J.
Lower, J.H.
Lagus, P.L.
"Equation of State of Forsterite,"
J.Geophys.Res. 76:518-528 (1971).
(Tungsten-plate impact experiments to 0.37 Mbar. Forsterite is a magnesium silicate.)

Ahrens, T.J.
Gaffney, E.S.
"Dynamic Compression of Enstatite,"
J.Geophys.Res. 76:5504-13 (1971). -CIT-
(60 to 480 kilobars.)

Brace, W.F.
Jones, A.H.
"Comparison of Uniaxial Deformation in Shock and Static Loading of Three Rocks,"
J.Geophys.Res. 76:4913-21 (1971).
(Granite, tonalite, limestone to about 20 kbar.)

Davies, G.F.
Anderson, D.L.
"Revised Shock-Wave Equations of State for High-Pressure Phases of Rocks and Minerals,"
J.Geophys.Res. 76:2617- (1971).

Gordon, R.B.
"Observation of Crystal Plasticity Under High Pressure with Applications to the Earth's Mantle,"
J.Geophys.Res. 76:1248-54 (1971).

Mogi, K.
"Fracture and Flow of Rocks Under High Triaxial Compression," J.Geophys.Res. 76:1255-69 (1971).
(Experiments with new triaxial apparatus.)

Morland, L.W.
"Finite Deformation Plasticity Theory with Application to Geologic Materials," J.Geophys.Res. 76:7062-78 (1971).

Oberbeck, V.R.
"Laboratory Simulation of Impact Cratering with High Explosives," J.Geophys.Res. 76:5732-49 (1971).
(2 km/sec Al cylinders and $\frac{1}{2}$-gram charges are used to produce craters in quartz sand.)

9. Rocks and Soils (cont'd; 1972)

Duba, A.
Olinger, B.
"Compression of Garnet to 100 Kilobars,"
J.Geophys.Res. 77:2496-9 (1972).
(X-ray measurements.)

Cook, A.H.
"The Dynamical Properties and Internal Structures of the Earth, the Moon, and the Planets,"
Proc.Roy.Soc.London A328:301-336 (1972).
(Planetary interiors involve properties of materials under high pressure. This is a review lecture.)

10. Silicon


Rao, D.V.G.L.N. "Laser-Induced Resistivity Changes in Silicon," J.Appl.Phys. 39:4853 (1968). -Maser Optics-

Oswald, R.B.,Jr. "Fracture of Silicon and Germanium Induced by Pulsed Electron Irradiation," IEEE Trans.Nucl.Sci. NS-13:63-69 (1966). -HDL-

McLean, F.B.
Oswald, R.B.,Jr.
Schallhorn, D.R.
Buxton, L.D. "Temperature Dependence of the Dynamic Response of Si, Ge, and InSb to a Pulsed Electron Beam," J.Appl.Phys. 42:3474-78 (1971). -HDL-
(20 to 300°K initial temperature.)

Gust, W.H.
Royce, E.B. "Axial Yield Strengths and Two Successive Phase Transition Stresses for Crystalline Silicon," J.Appl.Phys. 42:1897-1905 (1971).

Carr, R.H.
McCammon, R.D.
White, G.K. "Thermal Expansion of Germanium and Silicon at Low Temperatures," Phil.Mag. 12:157-163 (1965).

Gauster, W.B. "Low-Temperature Grüneisen Parameters for Silicon and Aluminum," Phys.Rev.B 4:1288-96 (1971). -Sandia-
(Pulsed electron beam data; 5 to 290°K.)

Mason, W.P.
Bateman, T.B. "Ultrasonic-Wave Propagation in Pure Silicon and Germanium," J.Acoust.Soc.Am. 36:644-652 (1964). -Bell Tel.-
(Phonon-phonon interaction accounts for the attenuation.)

Bundy, F.P. "Phase Diagrams of Silicon and Germanium to 200 kbar, 1000°C," J.Chem.Phys. 41:3809-14 (1964).
(Belt apparatus; resistance measured.)

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* INDICATES A COAUTHOR

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| PREV | 114 467 | 59 | 61 | | BENEDEK,G.B. | SOLID ENERGY FROM SW DATA | (HARVU) |
| JAP | 33 3224 | 62 | 50 | * | BENEDICK,W.B | DYNAMIC YIELD, QUARTZ GAGE | (SC) |
| JAP | 36 1775 | 65 | 50 | * | BENEDICK,W.B | QUARTZ SUBMICROSECOND STRESS GAGE | (SL) |
| SC | RR 68- 41 | 68 | 24 | * | BENZLEY,S.E. | TOODY II-CODE, 2D WAVE PROPAG | (SL) |
| SC | DR-68-885 | 68 | 73 | * | BENZLEY,S.E. | DYNAMIC MTRL PROPERTY LIBRARY | (SL) |
| SC | DR-69-516 | 69 | 24 | | BENZLEY,S.E. | TOODY II-A. 2D STRESS WAVE PROGRAM | (SL) |
| JGR | 76 1370 | 71 | 70 | * | BERESNEV,B.I | PLASTICITY RESULTING FROM PRESSURE | (USSR) |
| CREND | 249 2506 | 59 | 62 | | BERGER,J. | GRUENEISEN PARAMETER | (FRANC) |
| ACADE | (BK) 135 | 63 | 54 | | BERGER,M.J. | MONTE CARLO,CHARGED PARTICLES (IN ALDER) | |
| IJFM | 7 183 | 71 | 80 | * | BERKOWITZ,H. | T-DEP FRACTURE CRITERIA,6061-T6 AL | (MCDON) |
| JASA | 35 521 | 63 | 97 | * | BERNSTEIN,H. | ELAST MODULI,PYROLYTIC GRAPHITE | (MANLA) |
| GRES | CR 0484-1 | 68 | 11 | | BERT,C.W. | STRONG WAVES IN ELASTIC MTRLS | AD680236 |
| JAM | 34 725 | 67 | 34 | | BERTHOLF,L. | 2D ELASTIC WAVE PROPAG IN BARS | (SL) |
| SC | RR 68 · 41 | 68 | 24 | | BERTHOLF,L. | TOODY II-CODE, 2D WAVE PROPAG | (SL) |
| SC | DR-69-516 | 69 | 24 | * | BERTHOLF,L. | TOODY II-A. 2D STRESS WAVE PROGRAM | (SL) |
| JAM | 36 533 | 69 | 34 | | BERTHOLF,L. | E/P WAVES, 6061-T6 AL BARS | (SL) |
| SC | RR-69-596 | 70 | 15 | | BERTHOLF,L. | CALCS,ATTENUATION OF TRIANGULAR PULSE | (SL) |
| JAP | 36 1620 | 65 | 84 | * | BESHERS,D.N. | ELAST COEFFS, IRON, T=77-673 K | (BROWN) |
| DASA | 2404 | 70 | 45 | * | BHAUMIK,A.K. | SPH WAVES IN INELASTIC MTRLS | AD703295 |
| JAP | 26 182 | 55 | 91 | | BIOT,M.A. | THEORY, POROUS ANISOTROPIC SOLID | (SHELL) |
| JASA | 28 168 | 56 | 42 | | BIOT,M.A. | ELAST WAVES, POROUS SOLID.I. | (SHELL) |
| JASA | 28 179 | 56 | 42 | | BIOT,M.A. | ELAST WAVES, POROUS SOLID.II. | (SHELL) |
| JAP | 38 279 | 38 | 62 | | BIRCH,F. | P EFFECT,ELASTIC PARAMS,ISOTROPIC | (HARVU) |
| PREV | 71 809 | 47 | 62 | | BIRCH,F. | FINITE STRAIN, CUBIC CRYSTALS | (HARVU) |
| JGR | 65 1083 | 60 | 106 | | BIRCH,F. | COMP WAVE VELOC, ROCKS, 10 KBAR.1. | (HARVU) |
| JGR | 66 2199 | 61 | 106 | | BIRCH,F. | COMP WAVE VELOC, ROCKS, 10 KBAR.2. | (HARVU) |

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| MCGRA(BK) | | 137 | 63 | 106 | BIRCH,F. | GEOPHYS APPLICS,HI-P RES (IN PAUL) | (HARVU) |
| GSA | (BK) | 97 | 66 | 74 | BIRCH,F. | COMPRESSIBILITY(IN HBK PHYS CONSTS) | |
| HDP | 34 | 53 | 58 | 56 | BIRKHOFF,R.D | PASSAGE FAST ELECTRONS IN MATTER | (ORNL) |
| BJAP | 18 | 703 | 67 | 54 | BISHOP,H.E. | 5-40 KEV SCATTER,THICK TARGETS | (UCAMB) |
| AIAAJ | 8 | 2147 | 70 | 28* | BJORK,R.L. | SHAPE CALCS, IMPACT, LAMINATE | (SHI) |
| PHILM | 3 | 831 | 58 | 62 | BLACKMAN,M. | NEGATIVE VOL EXPANSION COEFFS | (IMPER) |
| JASA | 24 | 211 | 52 | 45 | BLAKE,F.G. | SPH WAVES IN SOLIDS | (CRC) |
| JAP | 41 | 3373 | 70 | 97 | BLAKSLEE,O.L | ELAST CONSTS,PYROLYTIC GRAPHITE | (UC) |
| JMPS | 12 | 245 | 64 | 45 | BLAND,D.R. | DILATATIONAL WAVES AND SHOCKS | (UMANC) |
| JIMA | 1 | 56 | 65 | 7 | BLAND,D.R. | SHOCK STRUCTURE IN A SOLID | (UMANC) |
| PREV | 137 | A1131 | 65 | 93* | BLUM,F.A. | MELT CURVES OF S,SE,TE TO 45 KBAR | (GD) |
| PREV | 137 | A1410 | 65 | 93 | BLUM,F.A. | TELLURIUM METAL TRANSIONS | (GD) |
| JAP | 39 | 1609 | 68 | 91 | BOADE,R.R. | SW COMPRESS, FOAMED GRAPHITE | (SL) |
| JAP | 39 | 5693 | 68 | 82 | BOADE,R.R. | SHOCK COMPRESS,POROUS COPPER | (SL) |
| JAP | 40 | 3786 | 69 | 51* | BOADE,R.R. | RELEASE ADIABAT EXPTS | (SL) |
| JAP | 40 | 3781 | 69 | 88 | BOADE,R.R. | COMPRESSION OF POROUS TUNGSTEN | (SL) |
| JAP | 41 | 4542 | 70 | 82 | BOADE,R.R. | HUGONIOT, PRESSED CU POWDER | (SL) |
| JAP | 43 | 434 | 72 | 41* | BOADE,R.R. | LASER WAVES IN QUARTZ PHENOLIC | (SL) |
| DOKLA | 14 | 65 | 69 | 68 | BOBROVSKII,S | SHOCK ADIABATS OF SOLIDS | (USSR) |
| JAM | 33 | 248 | 66 | 33* | BODNER,S.R. | E/P PULSE IN A BAR | (BROWN) |
| JAM | 35 | 489 | 68 | 12 | BOLEY,B.A. | PROPAG OF DISCONTINUITIES | (COLUM) |
| JPCS | 33 | 1838 | 72 | 75* | BOLSAITIS,P. | EQN STATE, NOBLE METALS | (UMD) |
| ARMA | 22 | 79 | 66 | 65* | BOWEN,R.M. | TD OF NON-LIN MTRLS | (LSU) |
| CJP | 37 | 1017 | 59 | 3 | BOWSHER,J.M. | PLASTIC WAVES IN SOLIDS | |
| JGR | 65 | 741 | 60 | 49 | BOYD,F.R. | APPARATUS-PHASE EQM MEASUREMENTS | (CARNE) |
| DASA | | 2561 | 70 | 110 | BRACE,W.F. | 15 ROCKS TO 30 KBAR (MIT) | AD717368 |
| JGR | 76 | 4913 | 71 | 111 | BRACE,W.F. | SHOCK,STATIC LOADING OF 3 ROCKS | |
| ACADE | BK | | 63 | 5 | BRADLEY,R.S. | HIGH-P PHYSICS AND CHEMISTRY | |
| PPS | 91 | 959 | 67 | 93* | BRAMMER,A.J. | 3RD ORDER CONSTS, IN ANTIMONIDE | (UEXET) |
| USPEK | 14 | 438 | 72 | 72 | BRANDT,N.B. | P EFFECT ON METAL FERMI SURFACE | (USSR) |
| JETP | 34 | 614 | 58 | 74* | BRAZHNIK,M. | METALS 400-4000 KBAR | (USSR) |
| JETP | 15 | 470 | 62 | 88* | BRAZHNIK,M. | SHOCK COMPRESSION, POROUS TUNGSTEN | (USSR) |
| JAP | 38 | 3271 | 67 | 43 | BREED,B.R. | DETERMINING DYNAMIC TENSILE PROPS | (LASL) |
| JAP | 39 | 3222 | 68 | 92 | BREED,B.R. | SHOCK INDUCED TRANSITION-ANTIMONY | (LASL) |
| JASA | 27 | 550 | 55 | 32* | BRENNAN,J.N. | ULTRASONIC DISPERSION IN RODS | (PENSU) |
| RCREV | 37 | 392 | 68 | 11* | BREUSOV,O.N. | STRONG SW EFFECTS ON SOLIDS | (USSR) |
| DOVER | BK | | 31 | 47 | BRIDGMAN,P.W | PHYSICS OF HIGH PRESSURE | |
| JCP | 54 | 4239 | 71 | 103 | BROADHURST,M | G CALC FOR N-ALKANES | (NBS) |
| HDL | TR | 1476 | 70 | 92 | BRODY,P.S. | SW-INDUCED TRANSITION, BATIO3 | AD717551 |
| JEM | 4 | 1 | 70 | 34 | BROER,L.J.F. | LONGIT MOTION OF AN ELASTIC BAR | |
| EXPME | 6 | 383 | 66 | 37* | BROUTMAN,L. | STRESS WAVES IN COMPOSITES (EXPTS) | (IIT) |
| JAP | 42 | 4160 | 71 | 75* | BROWN,N. | PHASE TRANSITIONS, FE-MN ALLOYS | (UPENN) |
| JAM | 10 | A111 | 43 | 31 | BRUCKNER,R.E | GRAPHICAL ANALYSIS-ELAST BAR IMPACT | |
| PHYSR | 157 | 524 | 67 | 66 | BRUGGER,K. | GRUNEISEN GAMMA FROM ELAST DATA | (BELLT) |
| JAP | 37 | 2283 | 66 | 59 | BULLOUGH,R. | ELASTIC EXPLOS IN SOLIDS | |
| SSP | 13 | 81 | 62 | 47 | BUNDY,F.P. | METALS AT HIGH T,P | (GE) |
| JCP | 41 | 3809 | 64 | 113 | BUNDY,F.P. | SI,GE PHASE DIAGRAMS TO 200 KBAR | (GE) |
| NCSU | TR | 70-1 | 70 | 15 | BURNISTON,E. | 1D SOLNS,NONLIN EP WAVES | AD699921 |
| DIT | TR | 125-11 | 67 | 26 | BURNS,B.P. | MODIT 1 CODE,CHARAC METH | (DIT) |
| JAP | 38 | 553 | 67 | 10* | BURNS,B.P. | LATE-STAGE EQUIV,1D IMPACTS | (DIT) |
| JAP | 39 | 5541 | 68 | 59 | BUSHNELL,J. | LASER-INDUCED STRESS WAVES | |
| AIAAJ | 2 | 977 | 64 | 43 | BUTCHER,B.M. | TIME-DEPEND SPALL IN METALS | (SC) |
| DETSYM | 4 | 295 | 65 | 7 | BUTCHER,B.M. | EP WAVE PROPAGATION | (SC) |

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| SC | RR | 65-208 | 66 | 27 | BUTCHER,B.M. | SRATE CODE WITH STRAIN RATE EFFECTS | (SC) |
| JAP | 37 | 402 | 66 | 9 | BUTCHER,B.M. | STRAIN-RATE EFFECTS IN METALS | (SC) |
| JAP | 37 | 1989 | 66 | 78* | BUTCHER,B.M. | YIELD POINT PHENOMENON, 1060 AL | (SC) |
| IJFM | 4 | 431 | 68 | 44* | BUTCHER,B.M. | TIME-DEP OF DYNAM FRACTURE | (SL) |
| JAP | 40 | 2967 | 69 | 83 | BUTCHER,B.M. | DYNAMIC COMPACTION OF POROUS IRON | (SC) |
| SC | RR-710112 | | 71 | 23 | BUTCHER,B.M. | WONDY-1D POROUS MTRL CALCS | (SC) |
| JGR | 70 | 885 | 65 | 25 | BUTKOVICH,T. | CALC-UG EXPLOS IN GRANITE | (LRL) |
| IEEE | NS- | 242 | 69 | 55* | BUXTON,L.D. | E-BEAM DEPTH-DOSE PROFILES | (HDL) |
| HDL | TR | 1536 | 71 | 55 | BUXTON,L.D. | ZEBRA-1 E-DEPOSITION CODE | (HDL) |
| [illegible] | 42 | 3463 | 71 | 57* | BUXTON,L.D. | 1D RESPONSE TO E-BEAM PULSE | (HDL) |
| JAP | 42 | 3474 | 71 | 57* | BUXTON,L.D. | TEMP-DEPENDENCE,SI,GE,INSB,E-BEAM | (HDL) |
| ACADE | (BK) | | 70 | 16 | CABLE,A.J. | HYPERVEL ACCELERATORS (IN KINSLOW) | |
| PHYSR | 98 | 969 | 55 | 62* | CAFFNEY,J. | T VAR,ELAST CONSTS,CUBIC CRYSTS | (NRL) |
| ACADE | BK | | 71 | 18 | CALDIROLA,P. | PHYSICS OF HIGH ENERGY DENSITY (ISP 48) | |
| JAMPS | 1 | 113 | 53 | 32 | CAMPBELL,J.D | PLASTIC BEHAV OF METAL RODS | (UOXFO) |
| JMPS | 18 | 427 | 70 | 83 | CAMPBELL,J.E | THEO E/P EQNS STATE, ARMCO IRON | (NWL) |
| URDC | | | 66 | 28 | CANNON,E.T. | LOW-VELOCITY PENETRATION | AD646457 |
| PHILM | 12 | 157 | 65 | 98 | CARR,R.H. | GE,SI THERMAL EXPAN AT LOW TEMP | (AUSTR) |
| JAP | 43 | 759 | 72 | 91 | CARROLL,M. | MODIFIED P-ALPHA FOR COMPOSITES | (LRL) |
| JAP | 43 | 1626 | 72 | 91 | CARROLL,M.M. | PORE-COLLAPSE RELATIONS | (LLL) |
| LASL | LA | 4059 | 68 | 91* | CARTER,W.J. | EQN STATE,SHOCKED POLYURETHANE FOAM | |
| ACADE | (BK) | 243 | 70 | 74* | CARTER,W.J. | EQN OF STATE FROM SW WORK (IN KINSLOW) | |
| LASL | LA | 4340 | 70 | 90* | CARTER,W.J. | LOW-DENSITY CARBON | AD702446 |
| JAP | 31 | 1377 | 60 | 52 | CASSITY,C.R. | STRESS WAVES IN SOLIDS | |
| JMPS | 10 | 99 | 62 | 33 | CHADWICK,P. | THERMOELASTIC DISTURBANCE | (USHEF) |
| QJMAM | 15 | 349 | 62 | 46 | CHADWICK,P. | SPH E-P WAVES FROM CAVITY | (SHEFU) |
| PTRS | 256A | 235 | 64 | 106 | CHADWICK,P. | DEEP UNDERGROUND EXPLOSIONS | (USHEF) |
| JAM | 26 | 528 | 59 | 37* | CHAKRAVORTY | SW PROPAG,NONHOM ELAST MEDIA | (BROWN) |
| JAP | 42 | 5665 | 71 | 103 | CHAMPION,A. | TEFLON 2.5 TO 25 KBAR | (SL) |
| JAP | 43 | 3362 | 72 | 19 | CHANG,H.C. | SHOCK STRUCTURE IN 606-T6 AL | (NCSU) |
| NCSU | TR | 71-1 | 71 | 80 | CHANG,H.L. | PLANE SW STRUCT, 6061-T6 AL | AD720716 |
| NCSU | TR | 70-1 | 70 | 15* | CHANG,T.S. | 1D SOLNS,NONLIN EP WAVES | AD699921 |
| JAP | 37 | 3567 | 66 | 75 | C[illegible]G,Y.A. | T DEPEND,ELAST CONSTS CU,AG,AU | (LRL) |
| PSS | 19 | 139 | 67 | 66* | C[illegible]ANG,Z.P. | P DERIVS,ELAST CONSTS, CUBIC MTRLS | (PSU) |
| JAP | 39 | 3276 | 68 | 67* | CHANG,Z.P. | HIGH-ORDER ELAST CONSTS UNDER P | (PSU) |
| CASE | TR | 10 | 67 | 87 | CHECHILE,R. | ULTRASONIC EQN OF STATE OF TA | AD655640 |
| IJSS | 7 | 5 | 71 | 17 | CHEN,P.J. | GROWTH OF 1D SHOCK WAVES | (SL) |
| ARMA | 17 | 350 | 71 | 17 | CHEN,P.J. | 1D SHOCK WAVES IN NONCONDUCTORS | (SL) |
| JCP | 53 | 2616 | 70 | 69* | CHEN,R.Y.S. | G FROM THERMAL COND MEAS+P | (UVIRG) |
| IEEE | NS- | 250 | 69 | 55* | CHILDERS,F.K | PULSED E-BEAM DEPOSITION | |
| JGR | 71 | 5911 | 66 | 44 | CHILTON,F. | SPALL FROM U/G EXPLOSION | |
| PREVB | 5 | 2826 | 72 | 72 | CHING,H.MA | IDEALIZED DYNAMIC STRESS-STRAIN CURVE | |
| JAP | 38 | 553 | 67 | 10 | CHOU,P.C. | LATE-STAGE EQUIV,1D IMPACTS | (DIT) |
| JAM | 34 | 745 | 67 | 10 | CHOU,P.C. | 1D ELAST WAVES BY CHARACTERISTICS | (DIT) |
| AFML | TR | 67-427 | 68 | 38 | CHOU,P.C. | INTRO-WAVE PROPAG,COMPOSITE MTRL | AD672269 |
| JCM | 3 | 500 | 69 | 38* | CHOU,P.C. | HUGONIOT OF COMPOSITES | (DREXE) |
| BRL | CR | 36 | 72 | 26* | CHOU,P.C. | MCDIT-3 CHARACTERISTICS CODE | AD724734 |
| AIAAJ | 7 | 1710 | 69 | 13 | CHOU,S.C. | STRESS-WAVE PROPAG, NONHOM MEDIA | (AMMRC) |
| CPST | 14 | 250 | 00 | 31 | CHREE,C. | EQNS OF ISOTROPIC ELASTIC SOLID | |
| JAP | 38 | 5395 | 67 | 79* | CHRISTENSEN | ATTEN OF SHOCK WAVES IN AL | (SRI) |
| DASA | | 2471 | 69 | 25 | CHRISTENSEN | ELK 40-CALC 100-TON,SURF (PI) | AD707802 |
| PHYSR | 97 | 1544 | 55 | 73* | CHRISTIAN,R. | EQN STATE METALS,SW MEASUREMENTS | (LASL) |
| DASA | | 2419 | 70 | 43* | CHRISTMAN,D. | SW PROPAG,FRACTURE IN 6061-T6 AL | AD705536 |

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| DASA | | 2511 | 70 | 2 | CHRISTMAN,D. | BIB-DYNAMIC MTRL PROPS (GMTC) | AD710823 |
| JAP | 42 | 4160 | 71 | 75 | CHRISTOU,A. | PHASE TRANSITIONS, FE-MN ALLOYS | (UPENN) |
| JMPS | 12 | 45 | 64 | 8 | CHU,B.T. | FINITE AMPL WAVES,INCOMPRESSIB MTRL | (YALEG) |
| ASTMP | 47 | 502 | 47 | 31* | CLARK,D.S. | EXPTS-PLASTIC DEFORM,IMPACT | (CIT) |
| SC | DR-69-516 | | 69 | 24* | CLARK,G.E. | TOODY II-A. 2D STRESS WAVE PROGRAM | (SL) |
| GSA | BK | | 66 | 74 | CLARK,S.P. | HBK OF PHYSICAL CONSTANTS | (YALE) |
| JAM | 33 | 248 | 66 | 33 | CLIFTON,R.J. | E/P PULSE IN A BAR | (BROWN) |
| QAM | 25 | 97 | 67 | 10 | CLIFTON,R.J. | DIFFCE METH,DYNAMIC ELASTICITY | (BROWN) |
| BRL | CR | 9 | 68 | 11 | CLIFTON,R.J. | E-P BDY IN 1-D WAVE PROPAGATION | AD674755 |
| IJFM | 7 | 183 | 71 | 44 | COHEN,L.J. | T-DEP FRACTURE CRITERIA,6061-T6 AL | (MCDON) |
| JCP | 40 | 71 | 64 | 97 | COLEBURN,N. | PYROLYTIC GRAPHITE | (NOL) |
| JASA | 47 | 269 | 70 | 74 | COLEBURN,N. | BULK MODULI OF SEVERAL SOLIDS | (NOL) |
| JCP | 48 | 555 | 68 | 92 | COLEBURN,N. | BORON TRINITRIDE TRANSFORMATION BY SHOCK | |
| JAP | 40 | 4624 | 69 | 75 | COLEBURN,N. | T EFFECT ON SW IN CU-ZN | (NOL) |
| ARMA | 13 | 167 | 63 | 64 | COLEMAN,B.D. | TD OF MTRLS WITH HEAT COND, VISC | (MELLO) |
| ARMA | 19 | 1- | 65 | 8 | COLEMAN,B.D. | WAVES IN MTRLS WITH MEMORY.I-IV | (MELLO) |
| PRS | A292 | 562 | 66 | 65 | COLEMAN,B.D. | TD,1D SW IN MTRLS WITH MEMORY | (MELLO) |
| PRS | 306 | 449 | 67 | 67 | COLEMAN,B.D. | SYMMETRY IN CONSTITUTIVE EQNS | AD680101 |
| QJMAM | 19 | 259 | 66 | 9 | COLLINS,W.D. | 1D NONLIN WAVES,INCOMPRESSIBLE | (USTRA) |
| QJMAM | 20 | 429 | 67 | 10 | COLLINS,W.D. | 1D NON-LIN WAVES, INCOMPRESSIBLE | (USTRA) |
| PRS | A328 | 301 | 72 | 112 | COOK,A.H. | INTERNAL STRUCT,PLANETS,EARTH | |
| JASA | 29 | 445 | 57 | 61 | COOK,R.K. | ELAST CONSTS VS P-CALC FROM ULTRASO | (BELLT) |
| BJAP | 15 | 883 | 64 | 55 | COSSLETT,V. | 5-30 KEV RANGE-ENERGY.I. | (UCAMB) |
| BJAP | 15 | 1283 | 64 | 55 | COSSLETT,V. | 5-30 KEV RANGE-ENERGY.II. | (UCAMB) |
| JASA | 47 | 795 | 70 | 91* | COST,J.R. | ELAST CONSTS,ULTRASONICS,UNIDIR FIBERS | |
| IIT | TR 68-181 | | 68 | 29 | COSTANTINO,C | SLAM CODE. STRESS WAVES | AD840134 |
| IIT | TR 68-181 | | 68 | 29 | COSTANTINO,C | SLAM CODE. I. APP | AD840135 |
| IIT | TR 68-181 | | 68 | 29 | COSTANTINO,C | SLAM CODE. II. PROGRAM | AD840136 |
| JCP | 4 | 147 | 69 | 13 | COSTANTINO,C | 2D WAVE PROPAG, NONLIN MEDIA | (CCNY) |
| RSI | 35 | 937 | 64 | 50* | COWAN,G.R. | ACCEL FLAT PLATES TO HIGH VELOCITY | (DUPON) |
| JAP | 43 | 2495 | 72 | 91 | COWIN,S.C. | TD MODEL, POROUS MTRLS | (TULAN) |
| JGR | 75 | 2063 | 70 | 110* | COWPERTHWAI. | HUGON, RELEASE ADIABATS FOR ROCKS | (SRI) |
| JAP | 42 | 457 | 71 | 70 | COWPERTHWAI. | CONSTIT RELS FROM EXPT DATA | |
| PTRS | 256A | 235 | 64 | 106* | COX ,A.D. | DEEP UNDERGROUND EXPLOSIONS | (USHCF) |
| PTRSL | 264 | 497 | 69 | 13* | COX ,A.D. | SOLNS TO UNIAXIAL E/P WAVES | AD691620 |
| IJNLM | 6 | 27 | 71 | 21* | COZZARELLI,F | SIMIL SOLNS, IMPACT PROBS | (SUNYB) |
| AMS | 2 | 291 | 65 | 64 | CRISTESCU,N. | LOADING CRITERIA,RATE-SENSITIVE | |
| QJMAM | 21 | 467 | 68 | 46* | CROZIER,R.J. | SPHERICAL EXPAN IN E/P SOLID | (STRAT) |
| GRES | CR 0484-1 | | 68 | 11* | CUMMINGS,B.E | STRONG WAVES IN ELASTIC MTRLS | AD680236 |
| JAP | 30 | 568 | 59 | 78* | CURRAN,D.R. | EXPT-HUGONIOT OF AL,STEEL | (SRI) |
| JAP | 34 | 2677 | 63 | 78 | CURRAN,D.R. | ATTEN OF SW IN ALUMINUM | (SRI) |
| JAP | 36 | 2591 | 65 | 78 | CURRAN,D.R. | RESIDUAL STRAIN IN ALUMINUM | (NORWA) |
| JAP | 25 | 928 | 54 | 32 | CURTIS,C.W. | 2ND MODES,POCHHAMMER-CHREE EQN | (LEHIG) |
| JASA | 30 | 552 | 58 | 33* | CURTIS,C.W. | END-LOADED BAR. I. THEORY | (LEHIG) |
| JASA | 30 | 559 | 58 | 33* | CURTIS,C.W. | END-LOADED BAR. II. EXPTS | (LEHIG) |
| SC | RR-70-571 | | 71 | 30* | DAHLGREN,D.A | COMPARISON-NUMERICAL TECHNIQUES,SW CALC | |
| JAP | 41 | 652 | 70 | 94* | DANDEKAR,D.P | E DEP,ELAST CONSTS RBCL,RBBR,RBI | (CORNU) |
| JAP | 41 | 667 | 70 | 69 | DANDEKAR,D.P | ELASTIC CONSTANTS OF CUBIC SOLID | (WSU) |
| PHYSR | 122 | 713 | 58 | 75 | DANIELS,W.B. | ELAST CONSTS, CU,AG,AU TO 10 KBAR | (CASE) |
| QAM | 28 | 454 | 70 | 15 | DANYLUK,N.T. | A NOTE ON E-P FLOW | (UALBE) |

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| JMPS | 8 | 52 | 60 | 5* | DAVIDS,N. | GRAPHICAL ANALYSIS, SW | (PSU) |
| JFI | 276 | 39 | 63 | 5* | DAVIDS,N. | HYPERVELOCITY IMPACT | (SDSC) |
| AIAAJ | 4 | 112 | 66 | 9* | DAVIDS,N. | DIRECT CALC,CYL,SPH ELASTIC WAVES | |
| AIAAJ | 9 | 1887 | 71 | 17* | DAVIDS,N. | CORRECTIONS TO AIAAJ 4,112(66) | (PERKI) |
| BOEIN | 125304-1 | 69 | 103 | | DAVIES,F.W. | HUGONIOT OF MYLAR | AD718398 |
| JGR | 76 | 2617 | 71 | 111 | DAVIES,G.F. | SW EQNS STATE, ROCKS,MINS | (CIT) |
| PTRSA | 240 | 375 | 48 | 31 | DAVIES,R.M. | STUDY OF HOPKINSON PRESSURE BAR | (UCAMB) |
| AMR | 6 | 1 | 53 | 4 | DAVIES,R.M. | STRESS WAVES IN SOLIDS | (UCW) |
| BJAP | 7 | 203 | 56 | 32 | DAVIES,R.M. | STRESS WAVES IN SOLIDS (BARS) | (UCW) |
| CAMBR(BK) | | 64 | 56 | 3 | DAVIES,R.M. | WAVES IN SOLIDS (IN BATCHELOR 56) | |
| CAMBR | BK | 64 | 56 | 3* | DAVIES,R.M. | SURVEYS IN MECANICS | |
| JPHYD | 4 | 1176 | 71 | 40 | DAVIES,W.E.A | ELAST WAVES, 2-PHASE COMPOSITE | (UMANC) |
| JCM | 5 | 478 | 71 | 40 | DAVIS,R.O. | COMPOS HUGON, THEORY MIXTURES | (UNMEX) |
| JAP | 42 | 5503 | 71 | 90 | DAVISON,L. | SW STRUCTURE, POROUS SOLIDS | (SL) |
| JAP | 43 | 988 | 72 | 44 | DAVISON,L. | CONTINUUM MEASURES,SPALL DAMAGE | (SL) |
| JAP | 39 | 6052 | 68 | 59 | DAVIT,J. | LASER SURFACE DAMAGE OF GLASSES | |
| PREV | 137 | A1131 | 65 | 93 | DEATON:B.C. | MELT CURVES OF S,SE,TE TO 45 KBAR | (GD) |
| PREV | 137 | A1410 | 65 | 93* | DEATON,B.C. | TELLURIUM METAL TRANSIONS | (GD) |
| JAP | 36 | 157 | 65 | 94 | DECKER,D.L. | EQN OF STATE OF NACL | (BRIGY) |
| JAP | 37 | 5012 | 67 | 94 | DECKER,D.L. | EQN OF STATE OF NACL | (BRIGY) |
| JAP | 43 | 4799 | 72 | 96 | DECKER,D.L. | NACL, CSCL TO 32 KBAR | (ANL) |
| JAM | 9 | A122 | 42 | 31 | DEJUHASZ,K.J | GRAPHICAL ANALYSIS-ELAST BAR IMPACT | |
| JFI | 248 | 15 | 49 | 32 | DEJUHASZ,K. | GRAPHICAL ANALYSIS, BAR IMPACT | (PENNS) |
| JFI | 248 | 113 | 49 | 32 | DEJUHASZ,K. | GRAPHICAL ANALYSIS, BAR IMPACT | (PENNS) |
| JGR | 76 | 1349 | 71 | 70* | DEMAREST,H. | CENTRAL FORCE MODEL FOR CUBICS | (LAMON) |
| JGR | 77 | 848 | 72 | 94 | DEMAREST,H. | ALKALI HALIDES-HIGH P ELAST PROPS | (COLUM) |
| JAM | 11 | A65 | 44 | 31* | DEMICHEAL,D. | EXPTS-DYNAMIC STRESS AND STRAIN | (GE) |
| JAP | 40 | 3326 | 69 | 109 | DENNEN,R.S. | SHOCK-TUBE-DRIVEN EXPTS ON SOLIDS | (IIT) |
| JASA | 29 | 204 | 57 | 3 | DERESIEWICZ | PLANE WAVES, THERMOEL SOLID | (COLU) |
| JCP | 5 | 517 | 70 | 15* | DERIBAS,A.A. | HYDRODYN EFFECTS,COLLIDING SOLIDS | (USSR) |
| UCRL | | 50442 | 68 | 55 | DICKINSON,W. | FORWARD BREMSSTRAHLUNG | |
| GA | | 6509 | 65 | 28 | DIENES,J.K. | THEORY-HYPERVEL IMPACT | AD617540 |
| GAMD | | 8497/1 | 68 | 30 | DIENES,J.K. | EULERIAN E/P METH.1. | AD678565 |
| GAMD | | 8497/2 | 68 | 30* | DIENES,J.K. | EULERIAN E/P METH. 2. FD EQNS | AD678566 |
| GAMD | | 8497/3 | 68 | 30 | DIENES,J.K. | EULERIAN E/P METH.3. PROGRAM | AD678567 |
| GAMD | | 8497/ADD | 68 | 30 | DIENES,J.K. | EULERIAN E/P METH.ADD. | AD678568 |
| ACADE(BK) | | | 70 | 16 | DIENES,J.K. | THEORY OF IMPACT (IN KINSLOW 70) | |
| JAP | 43 | 1605 | 72 | 19* | DIENES,G.J. | CALCS,SHOCKS IN 3-D SOLIDS | |
| JAP | 40 | 3207 | 69 | 68* | DILLON,O.W. | THERMODYN OF E-P MTRLS | (UKENT) |
| ASMET | 52 | 153 | 30 | 31 | DONNELL,L.H. | LONGIT WAVES, IMPACT | (UMICH) |
| PRLET | 1 | 402 | 58 | 78 | DORAN,D.G. | SW COMPRESSION OF ALUMINUM | (SRI) |
| JAP | 30 | 568 | 59 | 78* | DORAN,D.G. | EXPT-HUGONIOT OF AL.STEEL | (SRI) |
| JAP | 34 | 844 | 63 | 97 | DORAN,D.G. | PYRO GRAPHITE TO 300 KBAR | (SRI) |
| ACADE(BK) | | 229 | 66 | 9 | DORAN,D.G. | SHOCK EFFECTS IN SOLIDS | (SRI) |
| JAM | | 135 | 65 | 33* | DOSHI,K.D. | WAVES, CONTINUOUSLY NONHOMOG BAR | (SRI) |
| JMPS | 10 | 195 | 62 | 52* | DOUCH,L.S. | EXPTS-PLASTIC WAVES | (ARDE) |
| PPS | 91 | 959 | 67 | 93 | DRABBLE,J.R. | 3RD ORDER CONSTS, IN ANTIMONIDE | (UEXET) |
| PPS | 92 | 1090 | 67 | 94 | DRABBLE,J.R. | 3RD ORDER CONSTS, KCL,NACL,LIF | (UEXET) |
| RCREV | 37 | 392 | 68 | 11 | DREMIN,A.N. | STRONG SW EFFECTS ON SOLIDS | (USSR) |
| JCP | 43 | 1381 | 65 | 93* | DRICKAMER,H. | P EFFECT, COMPRESSIB OF 7 CRYSTALS | (UILL) |
| SOLSP | 19 | 135 | 66 | 74 | DRICKAMER,H. | HIGH-P X-RAY STUDIES, CRYSTALS | (UILL) |
| JAP | 42 | 669 | 71 | 36* | DRUMHELLER,D | WAVES IN LAMINATED COMPOSITE | (SL) |

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| JAP | 28 | 998 | 57 | 3 | DRUMMOND,W. | MULTIPLE SHOCK PRODUCTION | (SRI) |
| JAP | 43 | 2204 | 72 | 51* | DUBA,A.G. | QUASISTATIC DEFORMATION TO 5 KB | (LLL) |
| JGR | 77 | 2496 | 72 | 112 | DUBA,A. | GARNET TO 100 KBAR | (UCHIC) |
| PHYSR | 89 | 832 | 53 | 62 | DUGDALE,J.S. | THERMAL EXPAN OF SOLIDS | (NRC) |
| JMPS | 13 | 17 | 65 | 8* | DUNWOODY,J. | NON-LINEARITY EFFECT,ACCEL WAVE | (NPL) |
| IJNLM | 4 | 7 | 69 | 68* | DURELLI,A.J. | NATURAL STRESS | (CU) |
| JASA | 27 | 1054 | 55 | 62 | DUVALL,G.E. | ENTROPIC EQNS STATE, SW | (SRI) |
| AMREV | 15 | 849 | 62 | 5 | DUVALL,G.E. | SHOCK WAVES IN THE STUDY OF SOLIDS | (SRI) |
| BSSA | 52 | 869 | 62 | 6 | DUVALL,G.E. | CONCEPTS OF SHOCK WAVE PROPAGATION | (SRI) |
| ACADE(BK) | | 209 | 63 | 5 | DUVALL,G.E. | SHOCK WAVES (IN BRADLEY 63) | (SRI) |
| REPRINT | | 179 | 65 | 7* | DUVALL,G.E. | ELASTOPLASTICITY AND SW ATTEN | AD667339 |
| JGR | 71 | 4349 | 66 | 105* | DUVALL,G.E. | RELAX BEHIND ELAST SW IN ROCK | (SRI) |
| WSU | SDL | 67 01 | 67 | 84 | DUVALL,G.E. | EQUATIONS OF STATE IN SOLIDS | AD669251 |
| MONO | (BK) | 19 | 68 | 12 | DUVALL,G.E. | SHOCK WAVES IN SOLIDS (IN FRENCH 68) | (WSU) |
| SDL | | 68- 01 | 68 | 67 | DUVALL,G.E. | EQNS STATE, MELTING SOLIDS | AD680960 |
| IJMS | 11 | 1 | 69 | 13* | DUVALL,G.E. | FINITE WAVES IN LATTICES | (WSU) |
| JAP | 40 | 3771 | 69 | 13 | DUVALL,G.E. | STEADY SHOCK IN 1-D LATTICE | (WSU) |
| ACADE(BK) | | 7 | 71 | 18 | DUVALL,G.E. | SHOCKS IN CONDENSED MEDIA(IN CALDIROLA) | |
| WSU | SDL | 70- 02 | 71 | 70 | DUVALL,G.E. | EQN OF STATE OF SOLIDS.4.(BRL) | AD719307 |
| JCM | 5 | 130 | 71 | 40 | DUVALL,G.E. | SW PARAMS, 2-COMPON MIXTURE | (WSU) |
| ASTMP | 47 | 502 | 47 | 31 | DUWEZ,P.E. | EXPTS-PLASTIC DEFORM,IMPACT | (CIT) |
| JAP | 21 | 987 | 50 | 32* | DUWEZ,P. | PROPAG,PLASTIC DEFORMATION,SOLIDS | |
| IJNLM | 6 | 27 | 71 | 21* | DYM ,C.L. | SIMIL SOLNS, NONLIN IMPACT | |
| ZAMP | 14 | 12 | 63 | 46 | EASON,G. | WAVES FROM SPH,CYL CAVITIES | |
| ASR | 21 | 467 | 70 | 39 | EASON,G. | WAVES IN INHOMOG SPH,CYL SURFS | (USTRA) |
| NOL | TR | 68-160 | 68 | 23* | EDWARDS,D.J. | 1-D COMPUTER CODE (WONDY) | AD681377 |
| NOL | TR | 70- 79 | 70 | 53 | EDWARDS,D.J. | EM VELOC GAGE AND PMMA PART VELOC | AD717346 |
| NOL | TR | 70-266 | 71 | 17 | EDWARDS,D.J. | SHOCKS ONTO AL FOILS IN PMMA | |
| PPS | 81 | 751 | 63 | 54 | EHRENBERG,W. | E PENETRATION,LUMINESCENT MTRLS | (BIRKB) |
| JAP | 37 | 4737 | 66 | 76 | EHRENFELD,J. | HUGONIOT EQN STATE, ALKALI METALS | (GCA) |
| JAP | 43 | 3191 | 72 | 56* | EISEN,H. | 2 MEV E-BEAM DOSE-DEPTH, POLYSTYRENE | |
| JGR | 71 | 5911 | 66 | 44* | EISLER,J.D. | SPALL FROM U/G EXPLOSION | |
| HDP | 11/2 | 153 | 62 | 6* | ELBAUM,C. | ULTRASONIC STRESS WAVES IN SOLIDS | (GTBRI) |
| PPS | 91 | 947 | 67 | 104 | ELCOMBE,M.M. | LATTICE DYNAMICS OF QUARTZ | (EDINU) |
| PEPI | 2 | 69 | 69 | 100* | ENGLAND,A.W. | UNIVERSAL EQNS STATE,OXIDES,SILICATES | (MIT) |
| JAP | 34 | 746 | 63 | 63 | ENIG,J.W. | E,P,V,T,S DESCRIP OF METALS | (NOL) |
| JGR | 65 | 741 | 60 | 49* | ENGLAND,J.L. | APPARATUS-PHASE EQM MEASUREMENTS | (CARNE) |
| JRMA | 2 | 329 | 53 | 4 | ERICKSEN,J.L | WAVES IN INCOMPRESSIBLE MTRLS | (INDU) |
| PHYSF | 1 | 535 | 58 | 27 | ERKMAN,J.O. | NONUNIFORM OBLIQUE SHOCKS | (SRI) |
| SRI | TR | 015-59 | 59 | 43 | ERKMAN,J.O. | SPALL OF AL, CU | AD229841 |
| SRI | TR | 008-60 | 60 | 43 | ERKMAN,J.O. | SPALLING OF ALUMINUM | AD244108 |
| JAP | 32 | 939 | 61 | 43 | ERKMAN,J.O. | SMOOTH SPALLS AND IRON | (SRI, |
| DETSYM | 4 | 277 | 65 | 7 | ERKMAN,J.O. | EP EFFECTS IN SW ATTEN | (SRI) |
| REPRINT | | 179 | 65 | 7 | ERKMAN,J.O. | ELASTOPLASTICITY AND SW ATTEN | AD667339 |
| JAP | 38 | 5395 | 67 | 79 | ERKMAN,J.O. | ATTEN OF SHOCK WAVES IN AL | (SRI) |
| NOL | TR | 68-160 | 68 | 23 | ERKMAN,J.O. | 1-D COMPUTER CODE (WONDY) | AD681377 |
| NOL | TR | 70- 79 | 70 | 53* | ERKMAN,J.O. | EM VELOC GAGE AND PMMA PART VELOC | AD717346 |
| NOL | TR | 70-266 | 71 | 17* | ERKMAN,J.O. | SHOCKS ONTO AL FOILS IN PMMA | |
| GAMD | | 8497/2 | 68 | 30* | EVANS,M.W. | EULERIAN E/P METH. 2. FD EQNS | AD678566 |
| PPS | 60 | 1 | 48 | 85* | EVANS,W.M. | SW IN STEEL AND LEAD | (ARA) |
| GAMD | | 8497/3 | 68 | 30* | EVANS,M.W. | EULERIAN E/P METH.3. PROGRAM | AD678567 |
| USPEK | 9 | 54 | 66 | 65 | EVDOKIMOVA,V | HIGH-P P-T DIAGRAMS,PHASE CHANGES | (USSR) |
| JAP | 42 | 5837 | 71 | 55 | EVERHART,T.E | KEV ELECTRON PENETRATION | (UCALB) |

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| JCP | 3 | 226 | 68 | 12 FACCIOLI,E. | EULERIAN MODEL, SPH SYM | |
| JAP | 39 | 3328 | 68 | 59*FALCONER,W.E | LASER-CAUSED CHARGED PARTICLES | |
| DOKLA | 16 | 322 | 71 | 87 FATEEVA,N.S. | TA MELTING CURVE TO 60 KBAR | (USSR) |
| JAM | 11 | A65 | 44 | 31 FEHR,R.O. | EXPTS-DYNAMIC STRESS AND STRAIN | (GE) |
| INTER | BK | | 69 | 109*FERNBACH,S. | MATTER UNDER UNUSUAL CONDITIONS | |
| JFI | 283 | 203 | 67 | 10 FINE,A.D. | E-P WAVE PROPAGATION | (UNITE) |
| JMPS | 9 | 179 | 61 | 5 FLAVIN,J.N. | PLANE THERMO-ELASTIC WAVES,PRESTRESSED | |
| JASA | 30 | 552 | 58 | 33 FOLK,R. | END-LOADED BAR. I. THEORY | (LEHIG) |
| JAP | 40 | 4195 | 69 | 68 FOLTZ,J.V. | THEO HUGONIOT STATES, AL, CU | (NWL) |
| JMPS | 18 | 427 | 70 | 83*FOLTZ,J.V. | THEO E/P EQNS STATE, ARMCO IRON | (NWL) |
| JCP | 48 | 555 | 68 | 92*FORBES,J.W. | BORON TRINITRIDE TRANSFORMATION BY SHOCK | |
| PHYSR | 175 | 905 | 68 | 67*FORBES,J.W. | TD PROPS,NA, ANHARMONIC CONTRIB | (NOL) |
| JAP | 40 | 4624 | 69 | 75*FORBES,J.W. | T EFFECT ON SW IN CU-ZN | (NOL) |
| PRLET | 1 | 402 | 58 | 78*FOWLES,G.R. | SW COMPRESSION OF ALUMINUM | (SRI) |
| JAP | 31 | 655 | 60 | 52 FOWLES,G.R. | SW ATTEN, FLYING PLATE | (SRI) |
| JAP | 32 | 1475 | 61 | 78 FOWLES,G.R. | SW COMPRESSION OF 2024 ALUMINUM | (SRI) |
| ACADE | (BK) | 209 | 63 | 5*FOWLES,G.R. | SHOCK WAVES (IN BRADLEY 63) | (SRI) |
| JAP | 36 | 1377 | 65 | 50 FOWLES,G.R. | HUGONIOT DATA USING A MACH STEM | (SRI) |
| WSU | SDL | 67 01 | 67 | 84*FOWLES,G.R. | EQUATIONS OF STATE IN SOLIDS | AD669251 |
| SDL | | 68- 01 | 68 | 67*FOWLES,G.R. | EQNS STATE, MELTING SOLIDS | AD680960 |
| WSU | SDL-70-01 | | 70 | 69 FOWLES,R. | CONSTIT RELS FROM PLANE EXPT(WSU) | AD709736 |
| JAP | 41 | 360 | 70 | 15 FOWLES,R. | PLANE STRESS WAVES IN SOLIDS | (WSU) |
| JAP | 41 | 2740 | 70 | 46 FOWLES,R. | CONSERV RELS, SPH;CYL STRESS WAVES | (PIC) |
| JASA | 30 | 552 | 58 | 33*FOX ,G. | END-LOADED BAR. I. THEORY | (LEHIG) |
| JASA | 30 | 559 | 58 | 33 FOX ,G. | END-LOADED BAR. II. EXPTS | (LEHIG) |
| JAM | | 441 | 68 | 11 FRANCIS,P.H. | TEMP GRAD EFFECTS ON E-P WAVE | AD680497 |
| BRL | MR | 2075 | 70 | 53 FRANZ,R.E. | EXPT-HUGONIOT OF TEFLON | AD716333 |
| JAP | 39 | 5868 | 68 | 104 FRASER,D.B. | ACOUSTIC PROPS, VITREOUS SILICA | |
| MONO | BK | | 68 | 12 FRENCH,B.M. | SHOCK METAMORPHISM,NATURAL MATERIALS | |
| JGR | 69 | 2947 | 64 | 105*FRITZ,J.N. | COMPOS OF EARTHS INTERIOR | (LASL) |
| JGR | 72 | 4999 | 67 | 107*FRITZ,J.N. | HUGONIOT FOR 12 ROCKS | (LASL) |
| ACADE | (BK) | 293 | 70 | 74*FRITZ,J.N. | EQN OF STATE FROM SW WORK (IN KINSLOW) | |
| PHYSR | 157 | 524 | 67 | 66*FRITZ,T.C. | GRUNEISEN GAMMA FROM ELAST DATA | (BELLT) |
| KN | 69-500(R) | | 69 | 68 FROMME,J.A. | MODEL, 3D VISCOELASTOPLASTICITY | AD699835 |
| AFWL | TR 64-113 | | 65 | 105 FUGELSO,L.E. | CLOSE-IN SURF BURST EFFECTS | AD619969 |
| BJAP | 15 | 751 | 64 | 50 FULLER,P.J. | DYNAM P MEAS TO 300 KBAR | |
| BJAP | 2 | 275 | 69 | 75 FULLER,P.J. | RELEASE PATHS, AL,MG TO 200 KB | (UKAEA) |
| JPCS | 23 | 395 | 62 | 63 FUMI,F.G. | MIE-GRUNEISEN, HILDEBRAND EQNS | (ANL) |
| JETP | 15 | 477 | 62 | 63*FUNTIKOV,A.I | COMPRESSION OF POROUS AL,CU,PB,NI | (USSR) |
| WASHU | | 69-3 | 69 | 79 FYFE,I.M. | AL+PLANE CYLIN STRESS WAVES | AD695703 |
| JGR | 71 | 5504 | 71 | 111*GAFFNEY,E.S. | DYNAMIC COMPRESSION,ENSTATITE | (CIT) |
| LASL | LA | 3720 | 67 | 27*GAGE,W.R. | SIN-1D CODE, ELASTIC-PLASTIC | U196686 |
| JETP | 16 | 94 | 63 | 63 GANDELMAN,G. | QM EQN OF STATE FOR IRON | (USSR) |
| ZAMP | 19 | 243 | 68 | 45 GARG,S.K. | SPH EP WAVES | |
| ZAMP | 19 | 773 | 68 | 45 GARG,S.K. | CALCS-SPH EP WAVE PROPAG | |
| UTIAS | TN | 132 | 69 | 45 GARG,S.K. | SPHERICAL EP WAVES IN SOLIDS | AD690799 |
| ARL | 70-0072 | | 70 | 46 GARG,S.K. | SPH E-P WAVES IN SOLIDS (UTORO) | AD709369 |
| SSS | SR-267 | | 70 | 110*GARG,S.K. | STRESS EFFECTS, POROUS EARTH | AD712852 |
| JCM | 5 | 428 | 71 | 41 GARG,S.K. | HUGONIOT ANALYSIS,COMPOSITES (TINC) | (SSS) |
| JCM | 5 | 439 | 71 | 39 GARG,S.K. | FIND ERROR IN TORVIK EQUATION | |
| DNA | | 27251 | 71 | 41*GARG,S.K. | WAVES,POROUS GEOLOGIC COMPOSITES | AD732023 |
| JGR | 76 | 7947 | 71 | 30 GARG,S.K. | WAVES,FLUID-SAT SOLID (TINC) | (SSS) |

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| PREVB | 4 | 1280 | 71 | 80 | GAUSTER,W.B. | LOW-TEMP G FOR SI, AL (SL) |
| ACADE(BK) | | | 70 | 16 | GEHRING,J.W. | THIN-TARGET IMPACT THEORY (IN KINSLOW) |
| ACADE(BK) | | | 70 | 16 | GEHRING,J.W. | IMPACT-ENGINEERING ASPECTS (IN KINSLOW) |
| JPCS | 32 | 2545 | 71 | 76* | GETTING,I.C. | ALKALI METALS TO 45 KBAR (UCLA |
| JAP | 41 | 652 | 70 | 94 | GHAFELEHBASHI | P,T DEP,ELAST CONSTS RBCL,RBBR,RBI (CORNU) |
| PREV | 139 | A1666 | 63 | 95 | GHATE,P.B. | 3RD ORDER ELAST CONSTS, ALK HALIDES (CORNU) |
| PSS | 18 | 265 | 66 | 95* | GHATE,P.B. | ELAST CONSTS, ALKALI HALIDES (CORNU) |
| PSS | 21 | 507 | 67 | 95* | GHATE,P.B. | P DERIVS,ELAST CONSTS, NABR,KF (CORNU) |
| JPCS | 26 | 1523 | 65 | 93 | GIARDINI,A.A | BISMUTH COMPRESSIBILITY (USAEL) |
| PREV | 112 | 136 | 58 | 92 | GIBBONS,D.F. | THERMAL EXPANSION,DIAMOND STRUCTURE (BELLT) |
| JGR | 76 | 5489 | 71 | 99 | GIBBONS,R.V. | SHOCK METAMORPHISM,SI GLASSES (CIT) |
| JAM | 38 | 363 | 71 | 44* | GIEDT,W.H. | E-BEAM MELTING,SPALL METALS (LRL) |
| AJP | 36 | 822 | 68 | 34 | GILBERT,I.H. | LONGIT VIBRATIONS,ELASTIC ROD (BRANU) |
| JMPS | 18 | 397 | 70 | 15 | GILLIS,P.P. | T EFFECTS, SW IN VISCOPL SOLIDS (UKENT) |
| JAP | 37 | 2283 | 66 | 59* | GILMAN,J.J. | ELASTIC EXPLOS IN SOLIDS |
| AMR | 21 | 767 | 68 | 12 | GILMAN,J.J. | DISLOCATION DYNAMICS(REVIEW) (UILL) |
| PREV | 102 | 308 | 56 | 62 | GILVARRY,J.J | LINDEMANN AND GRUNEISEN LAWS (RAND) |
| PREV | 102 | 317 | 56 | 62 | GILVARRY,J.J | GRUNEISEN LAW AND HIGH-P FUSION CURV (RAND) |
| PREV | 102 | 331 | 56 | 62 | GILVARRY,J.J | G FOR SOLID, FINITE STRAIN (RAND) |
| JPCS | 26 | 1157 | 65 | 63 | GINELL,R. | TAITS LAW. I. ALKALI METALS (CUNY) |
| UCRL | | 51079 | 71 | 24 | GIROUX,E.D. | HEMP USERS MANUAL (UCRL) |
| ACADE(BK) | | | 70 | 16* | GLASS,C.M. | IMPACT METALLURGY (IN KINSLOW) |
| JCP | 5 | 517 | 70 | 15 | GODUNOV,S.K. | HYDRODYN EFFECTS,COLLIDING SOLIDS (USSR) |
| DOKLA | 14 | 65 | 69 | 68* | GOGOLEV,V.M. | SHOCK ADIABATS OF SOLI[illegible] (USSR) |
| IIT | TR | 68-181 | 68 | 29 | GOLLAND,R.W. | SLAM CODE. IV. EXTRA[illegible] AD840138 |
| JAP | 36 | 2189 | 65 | 88* | GONAS,A.M. | ELAST PROPS,TUNGSTEN,T=24-18[illegible] C (UCRI) |
| JETP | 23 | 777 | 66 | 95* | GONCHAROVA,V | P EFFECT,ELAST PROPS, RBCL, RBI (USSR) |
| JAP | 26 | 1472 | 55 | 77 | GORANSON,R. | DYNAMIC COMPRESSIBILITY, MET[illegible]S (LASL) |
| BAPS | 14 | 386 | 69 | 59* | GORDON,D.I. | (ABST)MANG PROP CHANGES,LASER IRRAD (NOL) |
| JGR | 76 | 1248 | 71 | 111 | GORDON,R.B. | CRYSTAL PLASTICITY AT HIGH P (YALEU) |
| JASA | 40 | 1322 | 70 | 59 | GOURNAY,L.S. | SURF HEATING TO ACOUSTICS |
| JAP | 40 | 2649 | 69 | 75 | GRACE,F.I. | SW STRENGTHENING OF FE, NI (NWL) |
| JAP | 40 | 4195 | 69 | 68* | GRACE,F.I. | THEO HUGONIOT STATES, AL CU (NWL) |
| BMI | | 197A-4-3 | 68 | 43* | GRAFF,C.F. | SPALL FRACTURE, RESPONSE AD669440 |
| JAP | 36 | 1775 | 65 | 50 | GRAHAM,R.A. | QUARTZ SUBMICROSECOND STRESS GAGE (SL) |
| JAP | 36 | 2955 | 65 | 98 | GRAHAM,R.A. | GERMANIUM, 20 TO 140 KBAR (SL) |
| JPCS | 27 | 1519 | 66 | 98 | GRAHAM,R.A. | SW COMPRESSION OF GERMANIUM (SL) |
| APLET | 11 | 69 | 67 | 57 | GRAHAM,R.A. | STRESSES FROM E BEAMS (SL) |
| SC | R-68-1857 | | 68 | 73 | GRAHAM,R.A. | SUMMARY-HUGONIOT ELAST MEAS (SL) |
| JGR | 76 | 4908 | 71 | 92 | GRAHAM,R.A. | LINEAR BULK MOD, SAPPHIRE (SL) |
| JAP | 43 | 826 | 72 | 104 | GRAHAM,R.A. | SPURIOUS SIGNALS,QUARTZ GAGES (SL) |
| PREV | 153 | 765 | 67 | 75* | GRANATO,A.V. | THRMAL PROPS-NOBLE METAL ANHARMONCY (UILL) |
| PHACO | 8 | 237 | 71 | 70* | GRANATO,A.V. | 3RD ORDER ELAST CONSTS,SOLID PROPS (UILL) |
| AIP | BK | 2200 | 72 | 74 | GRAY,D.E. | AIP HANDBOOK, 3RD ED |
| JMPS | 9 | 179 | 61 | 5* | GREEN,A.E. | PLANE THERMO-ELASTIC WAVES,PRESTRESSED |
| ARMA | 18 | 251 | 65 | 64 | GREEN,A.E. | GENERAL THEORY-EP CONTINUUM (NEWCA) |
| IJES | 4 | 483 | 66 | 42 | GREEN,A.E. | CONSTIT EQNS, INTERACTING CONTINUA (UNEWC) |
| CALUB | | | 69 | 13* | GREEN,A.E. | ACCEL WAVES IN E/P MTRLS AD695960 |
| ARMA | 16 | 79 | 64 | 8 | GREEN,W.A. | GROWTH OF PLANE DISCONTINUITIES (UNOTT) |
| JAP | 35 | 2170 | 64 | 7* | GREENE,R.F. | ELAST WAVE DECAY WITH DISLOCATIONS (NOL) |

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| AIAAJ | 9 | 1274 | 71 | 40 | GRESZCZUK,L. | INTERFIBER STRESSES | (MCDON) |
| JAM | 14 | A337 | 47 | 31* | GRIFFIS,L. | PERMANENT STRAIN,IMPACTED BAR | (IIT) |
| JAM | 15 | 256 | 48 | 4* | GRIFFIS,L. | PROPAG,PLASTICITY IN 1D COMPRESSION | (LMASS) |
| PREV | 107 | 368 | 57 | 99 | GROSS,B. | E-BEAM EFFECT,BOROSILICATE GLASS | |
| IJES | 6 | 295 | 68 | 11 | GROT,R.A. | RELATIVISTIC ELASTIC WAVES | (PERU) |
| JPCS | 30 | 2091 | 69 | 76 | GROVER,R. | COMPRESSIBILITY, ALKALI METALS | (LRL) |
| JPCS | 31 | 2347 | 70 | 69 | GROVER,R. | DYNAMIC VS STATIC DATA | (LRL) |
| JPCS | 32 | 2539 | 71 | 76 | GROVER,R. | ALKALI METAL PROPERTIES | (LRL) |
| ANNPK | 39 | 257 | 12 | 61 | GRUNEISEN,E. | THEORIE DES FESTEN ZUSTANDES... | |
| GORDO | BK | | 64 | 47 | GSCHNEIDNER,K | METALLURGY AT HIGH P,T | |
| SSF | 16 | 275 | 64 | 73 | GSCHNEIDNER,K | PROPS METALS,SEMIMETALS | |
| JAP | 38 | 4086 | 67 | 79* | GUENTHER,A.H | ULTRASONICS,1060,6061-T6 AL | (AFWL) |
| JAP | 40 | 1768 | 69 | 102* | GUENTHER,A.H | SOUND SPEED VS P,T IN PMMA | (AFWL) |
| JAP | 43 | 976 | 72 | 103* | GUENTHER,A.H | EQN STATE,POLYSTYRENE,PMMA | (AFWL) |
| AIAAJ | 8 | 1421 | 70 | 97* | GUESS,T.R. | PROPS OF DISTENDED CARBONS | (SL) |
| JAP | 42 | 5335 | 71 | 70* | GUPTA,P.N. | ELAST CONSTS, AL,CU,NI | (INDIA) |
| ARMA | 19 | 1- | 65 | 8* | GURTIN,M.E. | WAVES IN MTRLS WITH MEMORY.I-IV | (BROWN) |
| PRS | A292 | 562 | 66 | 65* | GURTIN,M.E. | TD,1D SW IN MTRLS WITH MEMORY | (MELLO) |
| JASA | 41 | 1320 | 67 | 10 | GURTIN,M.E. | ACCEL WAVES IN ELASTIC BODIES | (CASE) |
| IJSS | 7 | 5 | 71 | 17* | GURTIN,M.E. | GROWTH OF 1D SHOCK WAVES | (SL) |
| JAM | 36 | 479 | 69 | 35* | GURTMAN,G.A. | DISPERSIVE PULSE, COMPOSITE | (MCDON) |
| PMM | 22 | 763 | 58 | 44 | GUSEIN-ZADE | ACOUSTIC THEORY OF SPALLING | |
| JAP | 39 | 4610 | 68 | 100* | GUST,W.H. | SHOCK COMPRESS,ALUMINA | (SRI) |
| JAP | 41 | 2443 | 70 | 75 | GUST,W.H. | SW-INDUCED CHANGES, FE-CR-NI ALLOYS | (LRL) |
| JAP | 42 | 1897 | 71 | 113 | GUST,W.H. | YIELD STRENGTHS,SILICON | |
| JAP | 39 | 2082 | 65 | 8 | GYLDEN,N. | SIMILARITY, SOME METAL FLOWS | (SWEDE) |
| WSL | SDL 70- | 04 | 70 | 34 | HABBERSTAD,J | ELAST WAVES, BAR+DISCONTINUITY | AD716547 |
| AFML | TR 68-311 | | 70 | 39 | HAENER,J. | VISCOEL WAVES,UNIDIR COMPOS | (WHITT) AD717760 |
| AFML | TR 68-311 | | 70 | 38 | HAENER,J. | MICRODYNAMICS, WAVE PROPAG | (WHITT) AD702108 |
| AFML | TR 68-311 | | 71 | 42 | HAENER,J. | 4. ATTENUATION CALCS | AD734658 |
| GAMD | 8497/ADD | | 68 | 30* | HAGEMAN,L.J. | EULERIAN E/P METH.ADD. | AD678568 |
| GAMD | 8497/3 | | 68 | 30* | HAGEMAN,L.J. | EULERIAN E/P METH.3. PROGRAM | AD678567 |
| SSS | 3SR-350/1 | | 71 | 26 | HAGEMAN,L.J. | HELP-2D E/P EULERIAN CODE | AD726459 |
| SSS | 3SR-350/2 | | 71 | 26 | HAGEMAN,L.J. | HELP-FORTRAN LISTINGS | AD726460 |
| SSS | 3SR-201 | | 71 | 26 | HAGEMAN,L.J. | HELP CALCS-ARMOR PENETRATION | AD725998 |
| JGR | 76 | 7052 | 71 | 100* | HAHN,W.C. | ELAST MODULI-SINTERED NI OXIDE | (LEHIG) |
| RSI | 29 | 267 | 58 | 49 | HALL,H.T. | APPARATUS-HIGH P,T DATA | (BYU) |
| RSI | 31 | 125 | 60 | 49 | HALL,H.T. | APPARATUS FOR HIGH P,T | (GE) |
| JAP | 39 | 5488 | 68 | 83* | HALPIN,W.J. | SHOCK COMPRESS,POROUS IRON | (SL) |
| NOL | TR 70-141 | | 70 | 74 | HANLEIN,S.L. | LISTS OF PROPERTIES,METALS,PLASTICS | (NOL) |
| JCP | 51 | 425 | 69 | 102* | HANSEN,W.N. | THERMAL EXPAN, POLYETHYLENE | (NARC) |
| JCP | 3 | 307 | 68 | 27* | HANSON,M.E. | DIFFCE EQNS, 2D ELASTIC FLOW | |
| JAP | 39 | 3699 | 68 | 59 | HARRINGTON,R | THERMAL COND NEAR METAL SURFACE | |
| JAP | 34 | 3405 | 63 | 5 | HARRIS,P. | DECAY OF ELASTIC PRECURSORS | (NOL) |
| JAP | 35 | 2170 | 64 | 7 | HARRIS,P. | ELAST WAVE DECAY WITH DISLOCATIONS | (NOL) |
| JASA | 40 | 226 | 66 | 9 | HARRIS,P. | WEAK SHOCKS IN SOLIDS | (NOL) |
| PA | TR | 4255 | 71 | 70 | HARRIS,P. | G FOR POROUS MATERIALS | (PA) |
| JAP | 35 | 2090 | 64 | 78 | HARTMAN,W.F. | UNLOADING OF 6061-T6 ALUMINUM | (SC) |
| NOL | TR 71-208 | | 72 | 103* | HARTMANN,B. | BULK MOD OF POLYETHYLENE OXIDE | (NOL) |
| AMR | 17 | 1 | 64 | 37 | HASHIN,Z. | MECH BEHAVIOR,HETEROGENEOUS MEDIA | (UPENN) |
| JAM | 31 | 223 | 64 | 37 | HASHIN,Z. | ELASTIC MODULI,FIBER COMPOSITES | (UPENN) |

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| IJSS | 6 | 539 | 70 | 39 HASHIN,Z. | COMPLEX MODULI. I. THEORY | (UPENN) |
| BRL | MR | 2058 | 70 | 94 HAUVER,G.E. | HUGONIOT OF LIF CRYSTAL | AD712320 |
| JAP | 43 | 2734 | 72 | 50 HAWKE,R.S. | METHOD-TO SEVERAL MEGABARS | (LRL) |
| PRS | A294 | 38 | 66 | 4 HAZEBROEK,P | ELASTIC WAVES,FINITE LINE SOURCE | |
| GE | R65SD30 | | 65 | 64 HEER,E. | ELASTIC-PLASTIC EQNS WITH COMPRESSIBILITY | |
| JAM | 37 | 339 | 70 | 60 HEGEMIER,G. | STRESS FROM IMPULSIVE RADIATION | (UCALS) |
| JASA | 51 | 210 | 72 | 18 HENNEKE,E.G | STRESS WAVE REFL,BDY,ANISOTROPIC | (FSU) |
| GORDO | BK | | 64 | 47*HEPWORTH,M.T | METALLURGY AT HIGH P,T | |
| ARMA | 19 | 1- | 65 | 8*HERRERA R.,I | WAVES IN MTRLS WITH MEMORY.I-IV | (UMEXI) |
| JAM | 35 | 408 | 68 | 35*HERRMANN,G. | T-HARM WAVES,STRATIFIED MEDIUM | (NWU) |
| JAM | 35 | 467 | 68 | 35*HERRMANN,G. | CONTINUUM THEORY, LAMINATED MEDIUM | (NWU) |
| JAM | 35 | 689 | 68 | 35*HERRMANN,G. | VIBRATIONS OF LAMINATED BODY | (NWU) |
| AIAAJ | 6 | 1832 | 68 | 37*HERRMANN,G. | DISPERSION IN COMPOSITES | (NWU) |
| GORDO | (BK) | 183 | 70 | 38 HERRMANN,G. | DYNAMICS OF COMPOSITES(REC.ADV.ENG.SCI.V 5 | |
| PERGA | (BK) | 337 | 70 | 40 HERRMANN,G. | WAVE PROPAG IN COMPOSITES(IN WENDT70) | (NWU) |
| ASD | TDR-62-399 | | 62 | 5 HERRMANN,W. | STRESS WAVES,SPALL,1-D STRAIN | (MIT) |
| AFSWC | TDR-63-12 | | 63 | 27 HERRMANN,W. | INCLUDING MATERIAL STRENGTH | AD410386 |
| JAP | 34 | 2046 | 63 | 78*HERRMANN,W. | EQN STATE 6061-T6 ALUMINUM AT LOW P | (SC) |
| AFWL | TR 64-107 | | 64 | 27 HERRMANN,W. | LAGRANGIAN 2-D FD WITH MTRL STR | AD609523 |
| JAP | 35 | 1203 | 64 | 78*HERRMANN,W. | DYNAMIC RESPONSE OF AL | (SC) |
| SC | RR-66-601 | | 67 | 23 HERRMANN,W. | WONDY-1D E/P COMPUTER CODE | (SL) |
| SC | RR 66-602 | | 67 | 24*HERRMANN,W. | TOODY 2-D COMPUTER CODE | (SL) |
| SC | R-68-1784 | | 68 | 12 HERRMANN,W. | BASIC RESPONSE PHENOMENOLOGY | (SL) |
| SC | RR-66-2678 | | 68 | 89 HERRMANN,W. | EQN STATE, CRUSHABLE MTRLS | (SL) |
| ASME | (BK) | | 69 | 13 HERRMANN,W. | NONLIN WAVES, METALS (IN MIKLOWITZ 69) | |
| JAP | 40 | 2490 | 69 | 89 HERRMANN,W. | CONSTIT EQN,DUCTILE POROUS MTRLS | (SL) |
| SC | RR 70-471 | | 70 | 23 HERRMANN,W. | STRAIN RATE EFFECTS FOR WONDY | (SL) |
| JAM | 38 | 363 | 71 | 44*HESSE,J.L. | E-BEAM MELTING,SPALL METALS | (LRL) |
| JAM | 35 | 489 | 68 | 12*HETNARSKI,R. | PROPAG OF DISCONTINUITIES | (COLUM) |
| JGR | 71 | 5911 | 66 | 44*HEUBACH,H.G. | SPALL FROM U/G EXPLOSION | |
| GE | R64SD64 | | 64 | 8*HEYDA,J.F. | IMPACT-CALC VS EXPT | AD606123 |
| GE | R64SD87 | | 64 | 7 HEYDA,J.F. | PEAK P IN HYPERVELOC IMPACT | AD452991 |
| JAP | 39 | 4873 | 68 | 67 HEYDA,J.F. | TWO UNIVERSAL HUGONIOTS | (GE) |
| PHACO | 8 | 203 | 71 | 48 HEYDEMANN,P. | ULTRASONIC MEAS, VERY HIGH P | (NBS) |
| ACADE | (BK) | | 70 | 16 HICKERSON,N. | STRESS WAVES IN SOLIDS (IN KINSLOW 70) | |
| INTER | (BK) | 43 | 69 | 109 HIGGINS,G.H. | RESP OF ROCKS TO STRESS (MARK68) | (LRL) |
| PREV | 153 | 764 | 67 | 75 HIKI,Y. | THRMAL PROPS-NOBLE METAL ANHARMONCY | (UILL) |
| JMPS | 10 | 1 | 62 | 6 HILL,R. | ACCELERATION WAVES IN SOLIDS | (UNOTT) |
| JMPS | 11 | 357 | 63 | 42 HILL,R. | ELAST PROPS,REINFORCED SOLIDS | (UNOTT) |
| JAP | 37 | 3567 | 66 | 75*HIMMEL,L. | T DEPEND,ELAST CONSTS CU,AG,AU | (LRL) |
| NOL | TR 70-141 | | 70 | 74*HINCKLEY,W.M | LISTS OF PROPERTIES,METALS,PLASTICS | (NOL) |
| JAP | 40 | 3151 | 69 | 79 HO ,P.S. | P DEPENDENCE, AL ELASTIC CONSTANTS | (CORNU) |
| JAP | 42 | 5837 | 71 | 55*HOFF,P.H. | KEV ELECTRON PENETRATION | (UCALB) |
| JAP | 39 | 4555 | 68 | 77 HOFMANN,R. | SHOCK COMPRESS,POROUS AL (CALC) | (PIC) |
| PHACO | 8 | 237 | 71 | 70 HOLDER,J. | 3RD ORDER ELAST CONSTS,SOLID PROPS | (UILL) |
| JAP | 35 | 1771 | 64 | 86*HOLLAND,J.R. | BAUSCHINGER EFFECT IN MILD STEEL | (SL) |
| JAP | 36 | 3955 | 65 | 98*HOLLAND,J.R. | GERMANIUM, 20 TO 140 KBAR | (SL) |
| JPCS | 27 | 1519 | 66 | 98*HOLLAND,J.R. | SW COMPRESSION OF GERMANIUM | (SL) |
| RSI | 36 | 1617 | 65 | 50*HOLLENBACH,R | INTERFEROMETER PROPERTY MEASUREMENT | (SL) |
| JAP | 41 | 4208 | 70 | 92*HOLLENBACH,R | SW STUDIES,PMMA,SAPPHIRE | (SL) |
| JAP | 43 | 4669 | 72 | 51*HOLLENBACH,R | LASER INTERFEROMETER FOR MEAS VELOC | (SL) |

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| AFML | TR | 69-152 | 70 | 39*HOLMES,B.S. | EXPT-HUGONIOT,1D FIBER-REINF | AD716560 |
| JAP | 43 | 957 | 72 | 41 HOLMES,B.S. | STEADY SW, 1D FIBROUS COMPOS | (DREXE) |
| JAP | 43 | 1626 | 72 | 91*HOLT,A.C. | PORE-COLLAPSE RELATIONS | (LLL) |
| UCRL | | 51246 | 72 | 44*HOLT,A.C. | SPALL THRESHOLDS,6061T6 ALU258294 | (LLL) |
| JAP | 43 | 759 | 72 | 91*HOLT,A.C. | MODIFIED P-ALPHA FOR COMPOSITES | (LRL) |
| TASM | 60 | 152 | 67 | 79 HOLT,D.L. | STRAIN-RATE DEPEND IN AL | (GMTC) |
| JGR | 70 | 893 | 65 | 25 HOLZER,F. | EXPT,CALC-UG NX SHOCK WAVE | (LRL) |
| PRS | A290 | 408 | 66 | 27 HOLZER,F. | CALC OF UG NUCLEAR EXPLOS | (UCRL) |
| SC | RR-66-601 | | 67 | 23*HOLZHAUSER,P | WONDY-1D E/P COMPUTER CODE | (SL) |
| AFML | TR | 70-158 | 70 | 39 HOPKINS,A.K | CU+POLYETH MIX + SHOCK | AD712062 |
| AMREV | 14 | 417 | 61 | 5 HOPKINS,H.G. | DYNAMIC ANELASTIC METAL DEFORMATIONS | |
| PTRS | 256A | 235 | 64 | 106*HOPKINS,H.G. | DEEP UNDERGROUND EXPLOSIONS | (USHEF) |
| PTRSA | 213 | 437 | 14 | 31 HOPKINSON,B. | METHOD OF MEASURING PRESSURE | |
| WSU | SDL | 67 01 | 67 | 84*HORIE,Y. | EQUATIONS OF STATE IN SOLIDS | AD669251 |
| JAP | 40 | 5368 | 69 | 13 HORIE,Y. | NUMERICAL INTEGR, E-P SW | (NCSU) |
| JAP | 42 | 2925 | 71 | 17 HORIE,Y. | PLANE SHOCK PROFILES IN SOLIDS | |
| NCSU | TR | 71-1 | 71 | 80*HORIE,Y. | PLANE SW STRUCT, 6061-T6 AL | AD720715 |
| JAP | 43 | 3362 | 72 | 19*HORIE,Y. | SHOCK STRUCTURE IN 606-T6 AL | (NCSU) |
| JPCS | 33 | 1838 | 72 | 75 HSIEH,K. | EQN STATE, NOBLE METALS | (UMD) |
| JCM | 5 | 320 | 71 | 40 HUANG,W.C. | PLASTIC BEHAVIOR OF SOME COMPOSITES | (HARVU) |
| JFI | 276 | 39 | 63 | 5 HUANG,Y.K. | HYPERVELOCITY IMPACT | (SDSC) |
| JCP | 45 | 1979 | 66 | 65 HUANG,Y.K. | TD OF SW COMPRESSION, METALS | (WATEA) |
| JCP | 46 | 4570 | 67 | 66 HUANG,Y.K. | COMPRESSIBILITY, DEBYE SOLID | (WATEA) |
| JPC | 73 | 2459 | 69 | 68 HUANG,Y.K. | ON TAIT EQN OF COMPRESSIBILITY | (WATEA) |
| WATER | WVT-7039 | | 70 | 15 HUANG,Y.K. | NONLIN STRESS WAVES IN SOLIDS | AD712991 |
| JAP | 42 | 3212 | 71 | 20 HUANG,Y.K. | USING QUADRATIC US-UP RELATION | |
| JAP | 42 | 4084 | 71 | 17 HUANG,Y.K. | ACOUSTIC VS SW PROPERTIES | |
| PREV | 63 | 46 | 43 | 31 HUDSON,G.E. | DISPERSION,ELAST WAVES,CYLINDER | (BROWN) |
| PREV | 75 | 1552 | 49 | 32 HUGHES,D.S. | ELASTIC PULSES IN METAL RODS | (UTEX) |
| QJMAM | 21 | 467 | 68 | 46 HUNTER,S.C. | SPHERICAL EXPAN IN E/P SOLID | (STRAT) |
| PREV | 72 | 321 | 47 | 48 HUNTINGTON,H | ULTRASONIC MEAS,SINGLE CRYSTALS | (MIT) |
| APLET | 11 | 69 | 67 | 57*HUTCHISON,R. | STRESSES FROM E BEAMS | (SL) |
| JMPS | 8 | 52 | 60 | 5 HWANG,S.Y. | GRAPHICAL ANALYSIS, SW | (PSU) |
| JAP | 43 | 526 | 72 | 104*INGRAM,G.E. | SPURIOUS SIGNALS,QUARTZ GAGES | (SL) |
| JAP | 36 | 1377 | 65 | 50*ISBELL,W.M. | HUGONIOT DATA USING A MACH STEM | (SRI) |
| JAP | 37 | 3493 | 66 | 75*ISBELL,W.M. | LIGHT GAS GUN HUGONIOTS | (GMDRL) |
| DASA | | 2419 | 70 | 43 ISBELL,W.M. | SW PROPAG,FRACTURE IN 6061-T6 AL | AD705536 |
| DASA | | 2501-6 | 72 | 87 ISBELL,W.M. | MATERIALS. VI. TANTALUM (GMTC) | AD741217 |
| DASA | | 2404 | 70 | 45 ISENBERG,J. | SPH WAVES IN INELASTIC MTRLS | AD703295 |
| JETP | 13 | 1321 | 61 | 83 IVANOV,A.G. | RAREFACTION SHOCKS IN IRON,STEEL | (USSR) |
| SOVPHS | 5 | 196 | 63 | 83 IVANOV,A.G. | E-P WAVES IN IRON,STEEL | (USSR) |
| ONR | ACR-126 | | 65 | 52 JACOBS,S.J. | FOURTH DETONATION SYMPOSIUM | |
| ONR | ACR-184 | | 70 | 52 JACOBS,S.J. | FIFTH DETONATION SYMPOSIUM | |
| PPS | 60 | 1 | 48 | 85*JAMES,H.J. | SW IN STEEL AND LEAD | (ARA) |
| JAP | 37 | 3172 | 66 | 93 JEFFERY,R.N. | P CALIBRATION TO 100 KBAR WITH NACL | (BYU) |
| JAP | 38 | 1578 | 67 | 27 JOHNSON,J.N. | Q-CODE CALCS, PRECURSOR IN IRON | (WSU) |
| AJP | 36 | 917 | 68 | 67 JOHNSON,J.N. | SIMPLE MIE-GRUNEISEN MODEL | (SL) |
| JAP | 40 | 2287 | 69 | 68 JOHNSON,J.N. | CONSTIT RELATION, RATE-DEPEN FLOW, METALS | |
| JAP | 40 | 4321 | 69 | 79 JOHNSON,J.N. | WAVE PROFILES, 6061-T6 AL | (SL) |
| JAP | 42 | 5522 | 71 | 41 JOHNSON,J.N. | SW,LINEARLY ELAST ANISOTROPIC MTRL | (SL) |
| JAP | 43 | 2074 | 72 | 19 JOHNSON,J.N. | PLANE WAVES,ANISOTROPIC SOLIDS | (SL) |

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| AFML | TR 69-220 | 69 | 38 | JOHNSON,M.W. | PREDICTING PROPS,FIBER-REINF MTRLS | AD686457 |
| CREND | 249 2506 | 59 | 62* | JOIGNEAU,S. | GRUENEISEN PARAMETER | (FRANC) |
| AFSWC | TDR-63-12 | 63 | 27* | JONES,A.H. | INCLUDING MATERIAL STRENGTH | AD410386 |
| JAP | 37 3493 | 66 | 75 | JONES,A.H. | LIGHT GAS GUN HUGONIOTS | (GMDRL) |
| JGR | 76 4913 | 71 | 111* | JONES,A.H. | SHOCK,STATIC LOADING OF 3 ROCKS | |
| JASA | 35 5 | 63 | 5 | JONES,G.L. | ELASTIC WAVE INTERACTION | (MRI) |
| SAMSO | TR-70-217 | 70 | 36 | JONES,J.P. | PULSES IN LAMINATES (AEROS) | AD708464 |
| JAP | 33 3224 | 62 | 50 | JONES,O.E. | DYNAMIC YIELD, QUARTZ GAGE | (SC) |
| JAP | 35 1771 | 64 | 86 | JONES,O.E. | BAUSCHINGER EFFECT IN MILD STEEL | (SL) |
| JAP | 36 3955 | 65 | 98* | JONES,O.E. | GERMANIUM, 20 TO 140 KBAR | (SL) |
| JPCS | 27 1519 | 66 | 98* | JONES,O.E. | SW COMPRESSION OF GERMANIUM | (SL) |
| SC | R-68-1857 | 68 | 73* | JONES,O.E. | SUMMARY-HUGONIOT ELAST MEAS | (SL) |
| JAM | 36 470 | 69 | 34* | JONES,O.E. | CIRCULAR END-LOADED BAR | (SL) |
| JAP | 40 4920 | 69 | 82 | JONES,O.E. | SW-INDUCED YIELDING IN CU CRYSTALS | (SL) |
| JMM | 11 503 | 62 | 4 | JORDAN,D.W. | STRESS WAVE,FINITE CYL SOURCE | |
| JAP | 39 3931 | 68 | 104 | JULIAN,C.L. | CALC,ELAST CONSTS, ALPHA QUARTZ | (SL) |
| JAP | 41 678 | 70 | 56* | JUPITER,C.P. | 4,8 MEV ELECTRONS THRU BE,AL,AU | (GA) |
| JAP | 43 4348 | 72 | 102* | JURA,G. | G OF CRYSTALLINE POLYETHYLENE | (UCALB) |
| CONBU | BK 257 | 71 | 71* | KALININ,V.A. | EQNS STATE, SOLIDS, HIGH P,T | (USSR) |
| JGR | 71 3985 | 66 | 65* | KANAMORI,H. | EQNS STATE FROM SW EXPTS | (CALUB) |
| JGR | 73 6477 | 68 | 108* | KANAMORI,H. | SW EQNS STATE, ROCKS,MINERALS | (CIT) |
| PREV | 126 620 | 62 | 54 | KANTER,H. | 1-10 KEV RANGE INTERPRETATION | (WRL) |
| BSSA | 58 367 | 68 | 35* | KARAL,F.C. | ELAST WAVES IN LAYERED MEDIA | (NYU) |
| JAP | 21 987 | 50 | 32 | KARMAN,T.VON | PROPAG,PLASTIC DEFORMATION,SOLIDS | |
| JAP | 37 402 | 66 | 9* | KARNES,C.H. | STRAIN-RATE EFFECTS IN METALS | (SC) |
| JAP | 37 1989 | 66 | 78* | KARNES,C.H. | YIELD POINT PHENOMENON, 1060 AL | (SC) |
| JAM | 36 533 | 69 | 34* | KARNES,C.H. | E/P WAVES, 6061-T6 AL BARS | (SL) |
| JAP | 40 2967 | 69 | 83* | KARNES,C.H. | DYNAMIC COMPACTION OF POROUS IRON | (SC) |
| RMP | 24 28 | 52 | 54 | KATZ,L. | RANGE ENERGY RELATIONS | (USASK) |
| JAP | 30 568 | 59 | 78 | KATZ,S. | EXPT-HUGONIOT OF AL,STEEL | (SRI) |
| JASA | 36 653 | 64 | 33 | KAUL,R.K. | WAVES IN CIRCULAR ELASTIC ROD | (IBM) |
| JPCS | 30 2091 | 69 | 76* | KEELER,R.N. | COMPRESSIBILITY, ALKALI METALS | (LRL) |
| ACADE | (BK) 51 | 71 | 18 | KEELER,R.N. | SW IN SOLIDS-EXPT METHS (IN CALDIROLA) | |
| JAP | 34 172 | 63 | 43 | KELLER,D.V. | SPALL MECHANISM IN LUCITE | (BOEIN) |
| NORT | ARD-66-31R | 66 | 52 | KELLER,D.V. | SW IN SOLIDS, FOAMS | AD636271 |
| NSE | 27 190 | 67 | 55* | KELLER,F.L. | E-TRANSPORT THEORY | |
| JMPS | 18 397 | 70 | 15* | KELLY,J.M. | T EFFECTS, SW IN VISCOPL SOLIDS | (UKENT) |
| PREVL | 16 608 | 66 | 65* | KENNEDY,G.C. | NEW MELT LAW AT HIGH P | (UCLA) |
| PREV | 151 668 | 66 | 65* | KENNEDY,G.C. | NEW MELT LAW AT HIGH P | (UCLA) |
| JGR | 73 2795 | 68 | 76* | KENNEDY,G.C. | MELT CURVES, LI,NA,K,RB TO 80 KBAR | (UCLA) |
| JPCS | 30 2091 | 69 | 76* | KENNEDY,G.C. | COMPRESSIBILITY, ALKALI METALS | (LRL) |
| JPCS | 31 2329 | 70 | 74* | KENNEDY,G.C. | COMPRESSIB,18 METALS TO 45 KBAR | (UCLA) |
| JPCS | 32 2545 | 71 | 76* | KENNEDY,G.C. | ALKALI METALS TO 45 KBAR | (UCLA) |
| JPCS | 33 1377 | 72 | 74* | KENNEDY,G.C. | 22 ELEMENTS TO 45 KBAR | (UCLA) |
| JAM | 36 470 | 69 | 34 | KENNEDY,L.W. | CIRCULAR END-LOADED BAR | (SL) |
| PREV | 145 164 | 66 | 54 | KESSARIS,N.D | E-BEAM IN WATER | |
| JAP | 38 2923 | 67 | 66 | KEY ,S.W. | G TENSOR,ANISOTROPIC MATERIALS | (SC) |
| PPS | 81 751 | 63 | 54* | KING,D.E.N. | E PENETRATION,LUMINESCENT MTRLS | (BIRKB) |
| ACADE | BK 579 | 70 | 16 | KINSLOW,R. | HIGH-VELOC IMPACT PHENOM TA418.34.H5 | |
| JRNBS | 71A 363 | 67 | 100 | KIRBY,R.K. | THERMAL EXP,RUTILE,100-700 ' | (NBS) |
| SSS | SR-267 | 70 | 110* | KIRSCH,J.W. | STRESS EFFECTS, POROUS EAR.. | AD712852 |

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| JCM 5 | 428 | 71 | 41*KIRSCH,J.W. | HUGONIOT ANALYSIS,COMPOSITES (TINC) | (SSS) |
| JCM 5 | 439 | 71 | 39*KIRSCH,J.W. | FIND ERROR IN TORVIK EQUATION | |
| DNA | 27251 | 71 | 41*KIRSCH,J.W. | WAVES,POROUS GEOLOGIC COMPOSITES | AD732023 |
| AOPT 5 | 1922 | 66 | 54 KLEIN,C.A. | E-BEAM EXCITATION,LASER CRYSTALS | (RAYTH) |
| ACADE BK | | 71 | 18*KNOEPFEL,H. | PHYSICS OF HIGH ENERGY DENSITY (ISP 48; | |
| JASA 36 | 681 | 64 | 42 KNOLLMAN,G.C | WAVES, RANDOM SPHERICAL INHOMOG | (LMSC) |
| RMP 30 | 1178 | 58 | 4 KNOPOFF,L. | ATTEN,SMALL WAVES IN SOLIDS | (UCLA) |
| ACADE(BK) | 227 | 63 | 64 KNOPOFF,L. | EQNS STATE,MODERATE P (IN BRADLEY V1,63) | |
| ACADE(BK) | 247 | 63 | 64 KNOPOFF,L. | EQNS STATE,ULTRA-HI P (IN BRADLEY V1,63) | |
| JGR 74 | 1435 | 69 | 68*KNOPOFF,L. | SW TO ISOTHERMAL EQN STATE | (UCLA) |
| JGR 74 | 1439 | 69 | 68 KNOPOFF,L. | G PARAMETER AND EQNS OF STATE | (UCLA) |
| ASME (BK) | | 69 | 13 KNOPOFF,L. | ELAST WAVE IN WEDGE (IN MIKLOWITZ) | |
| JASA 35 | 5 | 63 | 5*KOBETT,D.R. | ELASTIC WAVE INTERACTION | (MRI) |
| JETP 15 | 477 | 62 | 63*KOLESNIKOVA | COMPRESSION OF POROUS AL,CU,PB,NI | (USSR) |
| PSS 18 | 265 | 66 | 95*KOLIWAD,K.M. | ELAST CONSTS, ALKALI HALIDES | (CORNU) |
| PSS 21 | 507 | 67 | 95 KOLIWAD,K.M. | P DERIVS,ELAST CONSTS, NABR,KF | (CORNU) |
| DOVER BK | 213 | 53 | 47 KOLSKY,H. | STRESS WAVES IN SOLIDS | |
| PHILM 45 | 712 | 54 | 32 KOLSKY,H. | EXPTS-ELAST WAVES IN BARS | (GTBRI) |
| JMPS 10 | 195 | 62 | 52 KOLSKY,H. | EXPTS-PLASTIC WAVES | (ARDE) |
| JGR 68 | 1193 | 63 | 5 KOLSKY,H. | STRESS WAVES IN INELASTIC SOLIDS | (BROWN) |
| PERGA(BK) | 233 | 60 | 47 KOLSKY,H. | EXPTS-WAVES,SOLIDS(1ST NAVAL STRUCT SYMP) | |
| CESW 1 | 39 | 65 | 33 KONSTANTINOV | WAVE PROPAG, FINITE BAR | |
| DOKLA 10 | 338 | 65 | 63 KOPYSHEV,U. | G IN THOMAS-FERMI APPROX | (USSR) |
| DOKLA 3 | 938 | 58 | 102*KORMER,S.B. | T, SP HT OF PLEXIGLAS | (USSR) |
| DOKLA 5 | 317 | 60 | 63 KORMER,S.B. | INTERPOL EQN STATE, METALS | (USSR) |
| JETP 15 | 477 | 62 | 63 KORMER,S.B. | COMPRESSION OF POROUS AL,CU,PB,NI | (USSR) |
| JETP 20 | 811 | 65 | 96 KORMER,S.B. | 5 HALIDES TO 5 MBAR | (USSR) |
| JETP 21 | 689 | 65 | 96 KORMER,S.B. | SW+ NACL,KCL TO 700 KBAR | (USSR) |
| USPEK 11 | 229 | 68 | 47 KORMER,S.B. | OPTICAL STUDY, SHOCKED DIELECTRICS | (USSR) |
| JCP 5 | 517 | 70 | 15*KOZIN,N.S. | HYDRODYN EFFECTS,COLLIDING SOLIDS | (USSR) |
| USPEK 13 | 778 | 71 | 17*KRASILNIKOV | NONLIN PHENOMENA IN ELASTIC WAVES | (USSR) |
| JAP 40 | 3207 | 69 | 68 KRATOCHVIL,J | THERMODYN OF E-P MTRLS | (UKENT) |
| JAP 42 | 1104 | 71 | 70 KRATOCHVIL,J | FINITE-STRAIN THEORY | |
| PREVL 16 | 608 | 66 | 65 KRAUT,E.A. | NEW MELT LAW AT HIGH P | (UCLA) |
| PREV 151 | 668 | 66 | 65 KRAUT,E.A. | NEW MELT LAW AT HIGH P | (UCLA) |
| AFML TR | 68-266 | 68 | 30*KREYENHAGEN | 2D STEEP CODE- IMPACT | AD683055 |
| AIAAJ 8 | 2147 | 70 | 28 KREYENHAGEN | SHAPE CALCS, IMPACT, LAMINATE | (SHI) |
| JAP 37 | 4737 | 66 | 76*KRIMSKY,S. | HUGONIOT EQN STATE, ALKALI METALS | (GCA) |
| JETP 34 | 614 | 58 | 74*KRUPNIKOV,K. | METALS 400-4000 KBAR | (USSR) |
| JETP 15 | 470 | 62 | 88 KRUPNIKOV,K. | SHOCK COMPRESSION, POROUS TUNGSTEN | (USSR) |
| JETP 15 | 470 | 62 | 88*KRUPNIKOVA,V | SHOCK COMPRESSION, POROUS TUNGSTEN | (USSR) |
| DOKLA 3 | 938 | 58 | 102*KURIAPIN,A.I | T, SP HT OF PLEXIGLAS | (USSR) |
| JAP 40 | 893 | 69 | 79 KUSUBOV,A.S. | DYNAM YIELD, 2024-T4 AL AT 313 KBAR | (LRL) |
| JAP 40 | 3776 | 69 | 79 KUSUBOV,A.S. | UNLOADING WAVES, 2024-T4 AL | (LRL) |
| JGR 76 | 518 | 71 | 111*LAGUS,P.L. | EQN STATE OF FORSTERITE | (CIT) |
| JASA 30 | 308 | 58 | 48*LAMB,J. | ULTRASONIC VELOC MEAS IN SOLIDS | (IMPER) |
| JAP 40 | 1768 | 69 | 102*LAMBERSON,D. | SOUND SPEED VS P,T IN PMMA | (AFWL) |
| JAP 43 | 976 | 72 | 103 LAMBERSON,D. | EQN STATE,POLYSTYRENE,PMMA | (AFWL) |
| PRS 103 | 622 | 23 | 31 LANDON,J.W. | EXPTS WITH HOPKINSON BAR | |
| JAP 39 | 3931 | 68 | 104*LANE,F.O. | CALC,ELAST CONSTS, ALPHA QUARTZ | (SL) |

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| KN | 70-760(R) | 70 | 38* | LARRABEE,A.D | WAVES IN COMPOSITES | (KN) |
| SC | DR-68-885 | 68 | 73 | LAWRENCE,R. | DYNAMIC MTRL PROPERTY LIBRARY | (SL) |
| SC | RR 70-471 | 70 | 23* | LAWRENCE,R. | STRAIN RATE EFFECTS FOR WONDY | (SL) |
| JPCS 28 | 939 | 67 | 92* | LAWSON,A.W. | T,P DEPEND,ELAS CONSTS,TLBR | (CALUR) |
| PREV 76 | 545 | 49 | 77 | LAZARUS,D. | ELAST CONSTS VS P-KCL,NACL,CUZN,CU,AL | |
| JAM 18 | 379 | 51 | 4 | LEE ,E.H. | PLASTIC-WAVE PROPAG EFFECTS | (BROWN) |
| JAM 21 | 63 | 54 | 4 | LEE ,E.H. | STEEL CYL HITTING RIGID TARGET | (BROWN) |
| JAM 34 | 931 | 67 | 10 | LEE ,E.H. | PLANE E-P WAVES AT FINITE STRAIN | (STANU) |
| JAP 38 | 19 | 67 | 10 | LEE ,E.H. | FINITE-STRAIN E-P THEORY | (STANU) |
| ASME (BK) | | 69 | 13 | LEE ,E.H. | PLASTIC WAVE ANALYSIS (IN MIKLOWITZ) | |
| JAM 36 | 1 | 69 | 14 | LEE ,E.H. | E/P DEFORMATION,FINITE STRAIN | (STANU) |
| JAM 36 | 497 | 69 | 38* | LEE ,E.H. | WAVE FRONT ANALYSIS | (UILL) |
| AIAAJ 8 | 1421 | 70 | 97 | LEE ,L.M. | PROPS OF DISTENDED CARBONS | (SL) |
| BAPS 14 | 386 | 69 | 59* | LEHTO,D.L. | (ABST)MANG PROP CHANGES,LASER IRRAD | (NOL) |
| SOLSP 12 | 275 | 61 | 64 | LEIBFRIED,G. | ANHARMONIC WAVES IN CRYSTALS | |
| WILEY BK | | 66 | 58 | LENGYEL,B.A. | INTRO-LASER PHYSICS | |
| UCRL | 50442 | 68 | 55* | LENT,E.M. | FORWARD BREMSSTRAHLUNG | |
| AMSTO 22 | 571 | 70 | 16 | LEPIK,U. | PLANE SHOCK IN A THICK PLATE | (POLAN) |
| JAP 39 | 3328 | 68 | 59* | LEROI,G.E. | LASER-CAUSED CHARGED PARTICLES | |
| JMPS 7 | 77 | 59 | 4 | LESSEN,M. | THERMOELASTIC SHOCK | (UPENN) |
| NCSU TR | 70- 11 | 70 | 80 | LIDDELL,W.L. | EXPT-PLASTIC WAVES, 1100F ALUMINUM | AD717328 |
| JIMA | 269 | 65 | 37 | LIGHTHILL,M. | WAVES,NONLIN DISPERSIVE SYSTEMS | |
| PSS 18 | 265 | 66 | 95 | LINCOLN,R.C. | ELAST CONSTS, ALKALI HALIDES | (CORNU) |
| ACADE(BK) | 229 | 66 | 9* | LINDE,R.K. | SHOCK EFFECTS IN SOLIDS | (SRI) |
| RSI 37 | 1 | 66 | 50 | LINDE,R.K. | EXPTS-RESP OF SHOCKED MTRLS | (SRI) |
| JAP 37 | 3259 | 66 | 89 | LINDE,R.K. | SW PROPAG,POROUS SOLIDS | (SRI) |
| JAP 43 | 3367 | 72 | 91 | LINDE,R.K. | POROUS CU,FE,U,POLYURETHANE | (SRI) |
| JAM | 135 | 65 | 33 | LINDHOLM,U.S | WAVES, CONTINUOUSLY NONHOMOG BAR | (SRI) |
| JAM | 441 | 68 | 11* | LINDHOLM,U.S | TEMP GRAD EFFECTS ON E-P WAVE | AD680497 |
| IEEE NS- | 250 | 69 | 55 | LITTLE,R. | PULSED E-BEAM DEPOSITION | |
| JAP 38 | 19 | 67 | 10* | LIU ,D.T. | FINITE-STRAIN E-P THEORY | (STANU) |
| AIAAJ 7 | 2158 | 69 | 34* | LIU ,T.H. | DYN RESPONSE, FINITE BARS | (GIT) |
| JAP 41 | 678 | 70 | 56 | LONERGAN,J.A | 4.2 MEV ELECTRONS THRU BE,AL,AU | (GA) |
| JAP 36 | 1620 | 65 | 84 | LORD,A.E. | ELAST COEFFS, IRON, T=77-673 K | (BROWN) |
| IJMS 11 | 1 | 69 | 13* | LOWELL,S.C. | FINITE WAVES IN LATTICES | (WSU) |
| JGR 76 | 518 | 71 | 111* | LOWER,J.H. | EQN STATE OF FORSTERITE | (CIT) |
| JAP 36 | 2189 | 65 | 88 | LOWRIE,R.L. | ELAST PROPS,TUNGSTEN,T=24-1800 C | (UCRI) |
| JMPS 12 | 59 | 64 | 33 | LUBLINER,J. | STRAIN-RATE DEPEND WAVES IN BARS | (UCBER) |
| SOLSP 12 | 275 | 61 | 64* | LUDWIG,W. | ANHARMONIC WAVES IN CRYSTALS | |
| JGR 73 | 2795 | 68 | 76 | LUEDEMANN,H. | MELT CURVES, LI,NA,K,RB TO 80 KBAR | (UCLA) |
| JAP 34 | 2046 | 63 | 78 | LUNDERGAN,C. | EQN STATE 6061-T6 ALUMINUM AT LOW P | (SC) |
| JAP 35 | 1203 | 64 | 78* | LUNDERGAN,C. | DYNAMIC RESPONSE OF AL | (SC) |
| JAP 42 | 669 | 71 | 36 | LUNDERGAN,C. | WAVES IN LAMINATED COMPOSITE | (SL) |
| JAP 42 | 4148 | 71 | 36 | LUNDERGAN,C. | WAVES IN LAMINATED COMPOSITES | (SL) |
| JAP 39 | 5488 | 68 | 83 | LYSNE,P.C. | SHOCK COMPRESS,POROUS IRON | (SL) |
| JAP 40 | 3786 | 69 | 51 | LYSNE,P.C. | RELEASE ADIABAT EXPTS | (SL) |
| JAP 41 | 351 | 70 | 90 | LYSNE,P.C. | RELEASE WAVES, POROUS CARBON | (SL) |
| JAP 42 | 2152 | 71 | 90 | LYSNE,P.C. | SHOCK LOADING, POROUS MTRLS | (SL) |
| PHYSR 89 | 832 | 53 | 62* | MACDONALD,D. | THERMAL EXPAN OF SOLIDS | (NRC) |
| RMP 30 | 1178 | 58 | 4* | MACDONALD,G. | ATTEN,SMALL WAVES IN SOLIDS | (MIT) |
| PPS 63B | 2 | 50 | 42 | MACKENZIE,J. | SOLID CONTAINING SPHERICAL HOLES | (UBRIS) |

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| LASL | LA | 3678 | 67 | 27 | MADER,C.L. | 1D E-P CALCS FOR AL N6737949 |
| LASL | LA | 3720 | 67 | 27 | MADER,C.L. | SIN-1D CODE, ELASTIC-PLASTIC |
| JAP | 38 | 3271 | 67 | 43* | MADER,C.L. | DETERMINING DYNAMIC TENSILE PROPS (LASL) |
| LASL | LA | 4059 | 68 | 91 | MADER,C.L. | EQN STATE,SHOCKED POLYURETHANE FOAM (LASL) |
| ACADE | (BK) | 181 | 64 | 25 | MAENCHEN,G. | TENSOR CODE (IN ALDER 64 VOL 3) |
| JAP | 37 | 3493 | 66 | 75* | MAIDEN,C.J. | LIGHT GAS GUN HUGONIOTS (GMDRL) |
| JAP | 26 | 555 | 55 | 77 | MALLORY,H.D. | SW PROPAG IN AL (NOL) |
| JAM | 18 | 203 | 51 | 32 | MALVERN,L.E. | WAVES IN BAR WITH STRAIN-RATE EFFECT (CIT) |
| QAM | 8 | 405 | 51 | 32 | MALVERN,L.E. | PLASTIC WAVE IN BAR |
| IJMS | 11 | 1 | 69 | 13 | MANVI,R. | FINITE WAVES IN LATTICES (WSU) |
| JGR | 75 | 7508 | 70 | 69 | MAO,N.H. | EMPIRICAL EQN OF STATE (HARVU) |
| CESW | 1 | 39 | 65 | 33* | MARCHENKO,L. | WAVE PROPAG, FINITE BAR |
| INTER | BK | | 69 | 109 | MARK,H. | MATTER UNDER UNUSUAL CONDITIONS |
| JAP | 31 | 1253 | 60 | 73* | MARSH,S.P. | EQN OF STATE, 19 METALS (LASL) |
| JAP | 33 | 654 | 62 | 81* | MARSH,S.P. | ULTIMATE YIELD STRENGTH, CU (LASL) |
| JGR | 69 | 2947 | 64 | 105* | MARSH,S.P. | COMPOS OF EARTHS INTERIOR (LASL) |
| JGR | 72 | 4999 | 67 | 107* | MARSH,S.P. | HUGONIOT FOR 12 ROCKS (LASL) |
| ACADE | (BK) | 293 | 70 | 74* | MARSH,S.P. | EQN OF STATE FROM SW WORK (IN KINSLOW) |
| NOL | TR | 63-141 | 63 | 77* | MARSHALL,J. | STRESS WAVES IN AL (NOL) |
| JGR | 76 | 1370 | 71 | 70* | MARTINOV,E.D | PLASTICITY RESULTING FROM PRESSURE (USSR) |
| SC | DR- | 68-885 | 68 | 73* | MASON,D.S. | DYNAMIC MTRL PROPERTY LIBRARY (SL) |
| SC | RR | 70-471 | 70 | 23* | MASON,D.S. | STRAIN RATE EFFECTS FOR WONDY (SL) |
| JAP | 19 | 940 | 48 | 3 | MASON,W.P. | SOUND WAVES IN METALS (BELLT) |
| JASA | 36 | 644 | 64 | 98 | MASON,W.P. | ULTRASONIC WAVES IN SI, GE (BELLT) |
| ACADE | BK | | 64 | 8 | MASON,W.P. | PHYSICAL ACOUSTICS VOL 1 PT A |
| JAP | 42 | 5335 | 71 | 70 | MATHUR,S.S. | ELAST CONSTS, AL,CU,NI (INDIA) |
| ASR | 15 | 137 | 65 | 64 | MATIN,S.A. | CONSTIT REL, COMPRESSIBLE PLAST MTRL (MIT) |
| JAP | 39 | 4555 | 68 | 77* | MAXWELL,D.E. | SHOCK COMPRESS,POROUS AL (CALC) (PIC) |
| NASA | CR- | 115350 | 71 | 25 | MAXWELL,D.E. | HYPERVEL IMPACT CRATER CALCS N7216248 |
| AIAAJ | 8 | 1421 | 70 | 97* | MAY ,R.P. | PROPS OF DISTENDED CARBONS (SL) |
| JAP | 43 | 962 | 72 | 103* | MAY ,R.P. | DATA, 3 EPOXY-RESIN SYSTEMS (SL) |
| PHILM | 12 | 157 | 65 | 98* | MCCAMMON,R.O | GE,SI THERMAL EXPAN AT LOW TEMP (AUSTR) |
| RAND | RM | 3905 | 64 | 63 | MCCLOSKEY,D. | ANALYTIC FORMULATION EQST FOR METALS(RAND) |
| JAP | 39 | 5541 | 68 | 59* | MCCLOSKEY,D. | LASER-INDUCED STRESS WAVES |
| JASA | 36 | 653 | 64 | 33* | MCCOY,J.J. | WAVES IN CIRCULAR ELASTIC ROD (IBM) |
| AFWL | TR | 65- 15 | 65 | 7 | MCDOWELL,E. | DEVIATORIC EFFECTS,STRESS WAVES AD620334 |
| JAP | 39 | 6104 | 68 | 79 | MCKENNA,P. | V DEPENDENCE OF G FOR ALUMINUM (NOL) |
| JGR | 76 | 2780 | 71 | 70 | MCLACHLAN,D. | P EFFECT OF METAL MELTING TEMP (OSU) |
| JAP | 42 | 3463 | 71 | 57* | MCLEAN,F.B. | 1D RESPONSE TO E-BEAM PULSE (HDL) |
| JAP | 42 | 3474 | 71 | 57 | MCLEAN,F.B. | TEMP-DEPENDENCE,SI,GE,INSB,E-BEAM (HDL) |
| PHYSR | 108 | 196 | 57 | 73* | MCQUEEN,R.G. | SW COMPRESSION OF 27 METALS (LASL) |
| ACADE | (BK) | 1 | 58 | 73* | MCQUEEN,R.G. | COMPRESSION SOLIDS BY SW (IN SEITZ VOL 6) |
| JAP | 31 | 1253 | 60 | 73 | MCQUEEN,R.G. | EQN OF STATE, 19 METALS (LASL) |
| JAP | 33 | 654 | 62 | 81 | MCQUEEN,R.G. | ULTIMATE YIELD STRENGTH, CU (LASL) |
| GORDO | (BK) | 44 | 64 | 47 | MCQUEEN,R.G. | LAB METHS,VERY HI-P,BEHAV OF METALS (LASL) |
| JGR | 69 | 2947 | 64 | 105 | MCQUEEN,R.G. | COMPOS OF EARTHS INTERIOR (LASL) |
| JGR | 72 | 4999 | 67 | 107 | MCQUEEN,R.G. | HUGONIOT FOR 12 ROCKS (LASL) |
| LASL | LA | 4340 | 70 | 90 | MCQUEEN,R.G. | LOW-DENSITY CARBON AD702446 |
| ACADE | (BK) | 293 | 70 | 16 | MCQUEEN,R.G. | EQN OF STATE FROM SW WORK (IN KINSLOW) |
| JAP | 19 | 940 | 48 | 3* | MCSKIMIN,H.J | SOUND WAVES IN METALS (BELLT) |

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| JASA | 22 | 413 | 50 | 48 | MCSKIMIN,H.J | ULTRASONIC TECHNS,SMALL SPECIMENS | (BELLT) |
| JASA | 30 | 314 | 58 | 98 | MCSKIMIN,H.J | GERMANIUM ELAST MODULI TO 50 KPSI | (BELLT) |
| JASA | 33 | 12 | 61 | 48 | MCSKIMIN,H.J | ULTRASONIC PULSE SUPERPOS METHOD | (BELLT) |
| JASA | 34 | 609 | 62 | 48 | MCSKIMIN,H.J | ULTRASONIC PULSE METHOD | (BELLT) |
| ACADE | (BK) | 272 | 64 | 48 | MCSKIMIN,H.J | ULTRASONIC METHS (IN MASON V1A,64) | (BELLT) |
| JAP | 36 | 1624 | 65 | 104 | MCSKIMIN,H.J | ELAST MODULI, QUARTZ VS P | (BELLT) |
| JASA | 41 | 1052 | 67 | 48 | MCSKIMIN,H.J | ULTRASONIC WAVE MEASUREMENTS | (BELLT) |
| JAP | 43 | 2944 | 72 | 93 | MCSKIMIN,H.J | ELASTIC MODULI, DIAMOND | |
| JAP | 38 | 347 | 67 | 104 | MCWHAN,D.B. | COMPR ALPHA-QUARTZ TO 150 KBAR | (BELLT) |
| AIAAJ | 4 | 112 | 66 | 9 | MEHTA,P.K. | DIRECT CALC,CYL,SPH ELASTIC WAVES | |
| AIAAJ | 9 | 1887 | 71 | 17 | MEHTA,P.K. | CORRECTIONS TO AIAAJ 4,112(66) | (PERKI) |
| BRL | MR | 2058 | 70 | 94* | MELANI,A. | HUGONIOT OF LIF CRYSTAL | AD712320 |
| JAP | 41 | 678 | 70 | 56* | MERKEL,G. | 4,8 MEV ELECTRONS THRU BE,AL,AU | (GA) |
| JMPS | 12 | 77 | 64 | 46 | MEYER,M.L. | SPHERICAL FIELDS IN SOLIDS | (USHEF) |
| JAM | 24 | 231 | 57 | 32 | MIKLOWITZ,J. | WAVES,DISPERSIVE ROD. I.THEORY | (NOTS) |
| JAM | 24 | 240 | 57 | 33 | MIKLOWITZ,J. | WAVES,DISPERSIVE ROD, II.EXPTS | (NOTS) |
| AMR | 13 | 865 | 60 | 6 | MIKLOWITZ,J. | ELASTIC WAVE PROPAGATION | (CIT) |
| JGR | 68 | 1190 | 63 | 33 | MIKLOWITZ,J. | WAVES IN ELASTIC RODS,PLATES | |
| ASME | BK | 183 | 69 | 13 | MIKLOWITZ,J. | WAVE PROPAG,SOLIDS QC176.8W3W3 | |
| ASME | (BK) | | 69 | 13 | MIKLOWITZ,J. | ELASTIC WAVEGUIDE WITH EDGE(IN MIKLOWITZ) | |
| IEEE | NS-14 | 245 | 67 | 55 | MILLER,D. | PULSED ENERGY SPECTROMETER | |
| JPCS | 25 | 1279 | 64 | 95 | MILLER,R.A. | P DERIVS,ELAST CONSTS, LIF,NAF | (CIT) |
| AIAAJ | 3 | 742 | 65 | 102 | MILLS,E.J. | HUGONIOTS FOR PLASTICS | (BMI) |
| PREV | 75 | 1552 | 49 | 32* | MIMS,R.L. | ELASTIC PULSES IN METAL RODS | (UTEX) |
| PIAS | 59 | 21 | 64 | 36 | MISHRA,S.K. | SOUND IN SEMI-INF STRATIFIED MEDIUM | (INDIA) |
| PREVB | 2 | 2167 | 70 | 95* | MITRA,S.S. | LATTICE DYN, CS HALIDES | (URI) |
| PREVB | 3 | 4398 | 71 | 95* | MITRA,S.S. | LATTICE DYN,ALKALI HALIDES | (URI) |
| JGR | 76 | 1255 | 70 | 111 | MOGI,K. | EXPTS-TRIAXIAL COMPRESSION,ROCKS | (UTOKY) |
| NASA | CR-115350 | | 71 | 25* | MOISES,H. | HYPERVEL IMPACT CRATER CALCS | N7216248 |
| BRL | R | 1357 | 67 | 45 | MOK ,C.H. | EXPANSION SPH CAV,E-P MATERIAL | AD654369 |
| JAP | 39 | 2072 | 68 | 45 | MOK ,C.H. | SOLID STR EFFECTS, SPH, PLANE SW | (BRL) |
| AJP | 36 | 822 | 68 | 34* | MOLLOW,B.R. | LONGIT VIBRATIONS,ELASTIC ROD | (BRANU) |
| RAND | RM | 6139 | 70 | 39 | MOON,F.C. | WAVES IN COMPOSITE WITH SPHERES | AD718087 |
| PRINU | | TR-27 | 71 | 41* | MOON,F.G. | ELASTIC WAVES IN FIBER COMPOSITES | AD731833 |
| AIAAJ | 9 | 1492 | 71 | 40* | MOON,F.C. | STRESS WAVES IN COMPOSITE RODS | (UKENT) |
| JCP | 54 | 4239 | 71 | 103* | MOPSIK,F.I. | G CALC FOR N-ALKANES | (NBS) |
| AFWL | TR 65-117 | | 65 | 78 | MORGAN,D.T. | G FOR AL, TEFLON | AD624320 |
| PTRS | 251 | 341 | 59 | 3 | MORLAND,L.W. | PLANE IRROT WAVES, EP MEDIUM | |
| UCAL | TR | 23 | 68 | 60 | MORLAND,L.W. | LASER-INDUCED YIELD,WAVES | AD676324 |
| UCAL | TR | 24 | 68 | 50 | MORLAND,L.W. | PLASTIC YIELD WAVES, LASER IRRAD | AD678381 |
| AIAAJ | 6 | 1063 | 68 | 9 | MORLAND,L.W. | STRESS WAVES FROM RADIATION | |
| PTRSL | 264 | 497 | 69 | 13 | MORLAND,L.W. | SOLNS TO UNIAXIAL E/P WAVES | AD691620 |
| JMPS | 17 | 371 | 69 | 45 | MORLAND,L.W. | SPH WAVE, E/P MTRLS | (UEA) |
| JMPS | 9 | 295 | 70 | 46 | MORLAND,L.W. | SPHERICAL UNLOADING PROBLEM | (UEA) |
| JGR | 76 | 7062 | 71 | 111 | MORLAND,L.W. | FINITE DEFORM PLASTICITY THEORY | (SSS) |
| JGR | 77 | 890 | 72 | 41 | MORLAND,L.W. | THEORY-FLUID SATUR POROUS SOLID | (SSS) |
| JPCS | 28 | 939 | 67 | 92 | MORSE,G.E. | T,P DEPEND,ELAS CONSTS,TLBR | (CALUR) |
| JAP | 40 | 4920 | 69 | 82* | MOTE,J.D. | SW-INDUCED YIELDING IN CU CRYSTALS | (SL) |
| JAM | 34 | 745 | 67 | 10* | MORTIMER,R.W | 1D ELAST WAVES BY CHARACTERISTICS | (DIT) |
| RAND | RM | 6139 | 70 | 39* | MOW ,C.C. | WAVES IN COMPOSITE WITH SPHERES | AD718087 |
| LASL | LA | 4013 | 68 | 44* | MUDD,W.L. | SPALL CRITERIA FOR NUMERICAL CALCS | (LASL) |
| PHILM | 26 | 489 | 72 | 72* | MUIR,H. | BAUSCHINGER EFFECT,DISCONTIN YIELDING | |

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|---|---|---|---|---|---|---|---|
| JIMA | 3 | 21 | 67 | 37 | MULHERN,J.F. | COATED ELASTIC FIBER | (UNOTT) |
| IJES | 7 | 129 | 69 | 38 | MULHERN,J.F. | CONTINUUM THEORY, E/P FIBRE-REINF MTRL | |
| ACADE(BK) | | 11 | 63 | 47 | MUNRO,D.C. | HI-P METHODS (IN BRADLEY V1,1963) | (ULEED) |
| DETSYM | 4 | 295 | 65 | 7* | MUNSON,D.E. | EP WAVE PROPAGATION | (SC) |
| JAP | 37 | 1652 | 66 | 78 | MUNSON,D.E. | P-V FOR AL,CU,PB | (SC) |
| JCM | 5 | 286 | 71 | 36 | MUNSON,D.E. | WAVES IN LAMINATES, MIXTURES | (SL) |
| JAP | 43 | 962 | 72 | 103 | MUNSON,D.E. | DATA, 3 EPOXY-RESIN SYSTEMS | (SL) |
| JAP | 42 | 387 | 71 | 55* | MURATA,K. | MONTE CARLO CALCS | (OSAKA) |
| PSAM | 1 | 158 | 49 | 3 | MURNAGHAN,F. | FOUNDATIONS OF THEORY OF ELASTICITY | (JHU) |
| WILEY | BK | 140 | 51 | 3 | MURNAGHAN,F. | FINITE DEFORMATION OF ELASTIC SOLID | |
| JGR | 75 | 2063 | 70 | 110* | MURRI,W.J. | HUGON, RELEASE ADIABATS FOR ROCKS | (SRI) |
| RPP | 22 | 74 | 59 | 3 | MUSGRAVE,M. | ELASTIC WAVES IN CRYSTALS | |
| AFOSR | 68-1552 | | 68 | 43 | NACHBAR,W. | THERMAL SHOCK,ELASTIC METALS | AD675645 |
| JGR | 70 | 3951 | 65 | 100* | NAFE,J.E. | BULK MOD-V RELATION, OXIDES | (BELLT) |
| ARMA | 18 | 251 | 65 | 64* | NAGHDI,P.M. | GENERAL THEORY-EP CONTINUUM | (NEWCA) |
| CALUB | | | 69 | 13 | NAGHDI,P.M. | ACCEL WAVES IN E/P MTRLS | AD695960 |
| JJAP | 2 | 743 | 63 | 54 | NAKAI,Y. | E-BEAM DEPOSITION | |
| CRREL | RR | 279 | 70 | 16 | NAKANO,T. | CALC,SHOCK DIFFRACTION,CAVITY | AD702906 |
| PREVB | 2 | 2167 | 70 | 95* | NAMJOSHI,K.V | LATTICE DYN, CS HALIDES | (URI) |
| PREVB | 3 | 4398 | 71 | 95 | NAMJOSHI,K.V | LATTICE DYN,ALKALI HALIDES | (URI) |
| STANU | | 184 | 68 | 11 | NAN ,N. | E-P WAVES FOR COMBINED STRESSES | AD678480 |
| IJNLM | 6 | 615 | 71 | 17* | NARIBOLI,G.A | VISCO-ELASTIC WAVES | (IOWAS) |
| NASA | TN D-5892 | | 70 | 80 | NAUMANN,R.J. | HIGH-T AL EQN OF STATE | |
| JAP | 42 | 4945 | 71 | 83 | NAUMANN,R.J | EQN STATE POROUS SHOCKED METALS | (MSFC) |
| JAM | 39 | 696 | 72 | 19 | NAYFEH,A.H. | ELAST WAVES,INHOMOG MEDIA | (UCASD) |
| JPCS | 7 | 58 | 58 | 75* | NEIGHBOURS,J | ELAST CONSTS, ZINC, 4.2-670 K | (FORD) |
| JAP | 33 | 3224 | 62 | 50* | NEILSON,F.W. | DYNAMIC YIELD, QUARTZ GAGE | (SC) |
| JAP | 36 | 1775 | 65 | 50* | NEILSON,F.W. | QUARTZ SUBMICROSECOND STRESS GAGE | (SL) |
| JAM | 39 | 696 | 72 | 19* | NEMAT-NASSER | ELAST WAVES-INHOMOG MEDIA | (UCASD) |
| EMECH | | 278 | 72 | 42 | NEVILL,G.E. | 1D WAVES,STEEL+EPOXY EXPTS | (UFLA) |
| SPSS | 12 | 1312 | 70 | 92* | NIKANOROV,S. | T DEPEND, ELAST CONSTS OF TE | |
| JAM | 24 | 240 | 57 | 33* | NISEWANGER,C | WAVES,DISPERSIVE ROD, II.EXPTS | (NOTS) |
| ARMA | 13 | 167 | 63 | 64* | NOLL,W. | TD OF MT . WITH HEAT COND, VISC | (JHU) |
| JGR | 76 | 7052 | 71 | 100 | NOTIS,M.R. | ELAST MODULI-SINTERED NI OXIDE | (LEHIG) |
| JETP | 13 | 1321 | 61 | 83* | NOVIKOV,S.A. | RAREFACTION SHOCKS IN IRON,STEEL | (USSR) |
| SOVPHS | 5 | 19[illegible] | 63 | 83* | NOVIKOV,S.A. | E-P WAVES IN IRON,STEEL | (USSR) |
| SC | RR 70-428 | | 70 | 60 | NUNZIATO,J. | RAD-GEN WAVE PROPAG | (SL) |
| JGR | 76 | 5732 | 71 | 111 | OBERBECK,V. | HE SIMUL OF IMPACT CRATERS | (AMES) |
| JGR | 75 | 1947 | 70 | 82 | OKEEFFE,D.J. | P,V,T RELATIONS FOR COPPER | (NOL) |
| JAP | 41 | 2743 | 70 | 15* | OKEEFFE,D.J. | ELASTIC RELIEF WAVES IN AL, CU | (NOL) |
| JAP | 41 | 5101 | 70 | 20 | OKEEFFE,D.J. | P EFFECTS, THERMAL EXPANSION | (NOL) |
| JAP | 42 | 888 | 71 | 82 | OKEEFFE,D.J. | SHOCK STATES OF POROUS CU | (NOL) |
| PRS | A200 | 523 | 50 | 62 | OLDROYD,J.G. | RHEOLOGICAL EQNS OF STATE | |
| JGR | 77 | 2496 | 72 | 112* | OLINGER,B. | GARNET TO 100 KBAR | (LASL) |
| SC | RR-69-596 | | 70 | 15* | OLIVER,M.L. | CALCS,ATTENUATION OF TRIANGULAR PULSE | (SL) |
| BMI | 197A-4-3 | | 68 | 43 | OSCARSON,J. | SPALL FRACTURE, RESPONSE | AD669440 |
| PERGA | BK | | 65 | 30 | OSTRACH,S. | DEVELOPMENTS IN MECHANICS, VOL 2 PT 2 | |
| IEEENS | 13 | 63 | 66 | 57 | OSWALD,R.B. | SI,GE FRACTURE IN E-BEAM | (HDL) |
| APLET | 13 | 279 | 68 | 57 | OSWALD,R.B. | RESPONSE SOLIDS TO PULSED E-BEAM | (HDL) |
| APLET | 16 | 24 | 70 | 57 | OSWALD,R.B. | G FROM PULSED E-BEAM LOADING | (HDL) |
| JAP | 42 | 3474 | 71 | 57* | OSWALD,R.B. | TEMP-DEPENDENCE,SI,GE,INSB,E-BEAM | (HDL) |

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| JAP | 42 | 3463 | 71 | 57 | OSWALD,R.B. | 1D RESPONSE TO E-BEAM PULSE | (HDL) |
| IEEE NS- | | 250 | 69 | 55* | OTTESON,J. | PULSED E-BEAM DEPOSITION | |
| PHYSR | 98 | 969 | 55 | 62 | OVERTON,W.C. | T VAR,ELAST CONSTS,CUBIC CRYSTS | (NRL) |
| PPS | 60 | 1 | 48 | 85 | PACK,D.C. | SW IN STEEL AND LEAD | (ARA) |
| EXPME | 12 | 83 | 72 | 41 | PAO ,Y.H. | RECENT WORK-WAVES IN SOLIDS | (CORNU) |
| JASA | 35 | 521 | 63 | 97 | PAPADAKIS,E | ELAST MODULI,PYROLYTIC GRAPHITE | (MANLA) |
| JAM | 11 | A65 | 44 | 31* | PARKER,E.R. | EXPTS-DYNAMIC STRESS AND STRAIN | (GE) |
| IJNLM | 4 | 7 | 69 | 68 | PARKS,V.J. | NATURAL STRESS | (CU) |
| GORDO | BK | | 64 | 47* | PARLEE,N.A.D | METALLURGY AT HIGH P,T | |
| JAP | 43 | 1605 | 72 | 19 | PASKIN,A. | CALCS,SHOCKS IN 3-D SOLIDS | |
| JAP | 35 | 3407 | 64 | 63 | PASTINE,D.J. | EQN OF STATE,FCC METALS | (NOL) |
| PHYSR | 138 | A767 | 65 | 63 | PASTINE,D.J. | GRUNEISEN PARAM,MONATOMIC CUBIC CRYSTALS | |
| PHYSR | 148 | 748 | 66 | 65 | PASTINE,D.J. | THERMAL EXP,STRUCT,ANISO MONAT SOLIDS | (NOL) |
| JPCS | 28 | 522 | 66 | 76 | PASTINE,D.J. | THERMAL CONTRIBS,ELASTIC CONSTS NA | (NOL) |
| JPCS | 27 | 1783 | 66 | 20 | PASTINE,D.J. | CURVATURE IN VELOC RELATION,METALS | (NOL) |
| PRLET | 18 | 1187 | 67 | 76 | PASTINE,D.J. | PVET EQN STATE,METALLIC SODIUM | (NOL) |
| PRLET | 21 | 1582 | 68 | 67 | PASTINE,D.J. | VOLUME DEPENDENCE OF GRUNEISEN PARAM | (NOL) |
| JAP | 39 | 5104 | 68 | 79* | PASTINE,D.J. | V DEPENDENCE OF G FOR ALUMINUM | (NOL) |
| JCP | 49 | 3012 | 68 | 67 | PASTINE,D.J. | P,V,T EQN OF STATE FOR POLYETHYLENE | (NOL) |
| PHYSR | 175 | 905 | 68 | 67 | PASTINE,D.J. | TD PROPS,NA, ANHARMONIC CONTRIB | (NOL) |
| JAP | 40 | 440 | 69 | 20 | PASTINE,D.J. | INTERPOLATION-US VS UP RELATION | (NOL) |
| JAP | 41 | 2743 | 70 | 15 | PASTINE,D.J. | ELASTIC RELIEF WAVES IN AL, CU | (NOL) |
| JAP | 41 | 3144 | 70 | 77 | PASTINE,D.J. | THEO SW PROPS, POROUS AL | (NOL) |
| JAP | 41 | 5085 | 70 | 103 | PASTINE,D.J. | V DEP, THERMAL EXPAN, POLYMERS | (NOL) |
| JGR | 75 | 7421 | 70 | 69 | PASTINE,D.J. | ACCURACY, WACHTMAN-ANDERSON RELATION | (NOL) |
| AIAAJ | 9 | 1887 | 71 | 17* | PATEL,N.T. | CORRECTIONS TO AIAAJ 4,112(66) | (PERKI) |
| MCGRA | BK | | 63 | 52 | PAUL,W. | SOLIDS UNDER PRESSURE | (HARVU) |
| SOVPJ | 10 | 35 | 67 | 76 | PAVLOV,S.D. | THEORY, K,RB,CE EQN OF STATE | (USSR) |
| JASA | 35 | 525 | 63 | 90 | PAYTON,R.G. | SW, SOLID AND COMPACTIBLE MEDIA | (AVCO) |
| QJMAM | 19 | 83 | 66 | 34 | PAYTON,R.G. | ELAST WAVES, NONHOMOG ROD | (ADELP) |
| DOVER | BK | 256 | 54 | 47* | PEARSON,J.C. | METALS UNDER IMPULSIVE LOADS | |
| PICAT | | | 66 | 9 | PEARSON,J.C. | PLANE SHOCKS IN METALS | AD634630 |
| JAM | 36 | 479 | 69 | 35 | PECK,J.C. | DISPERSIVE PULSE, COMPOSITE | (MCDON) |
| JAM | 36 | 485 | 69 | 35* | PECK,J.C. | DISPERSIVE PULSE,COMPOSITE,EXPTS | (AEROS) |
| SAMSO | TR-69-102 | | 69 | 35* | PECK,J.C. | DISPERSIVE PULSE PROPAGATION | AD685712 |
| APL | 16 | 120 | 70 | 60 | PEERCY,P.S. | ULTRAFAST RISE TIME STRESS WAVES | (SL) |
| RMP | 24 | 28 | 52 | 54* | PENFOLD,A.S. | RANGE ENERGY RELATIONS | (USASK) |
| JAP | 37 | 2304 | 66 | 33 | PENNER,S.S. | LASER IRRAD OF SOLID BAR | |
| AFSWC | TDR-63-12 | | 63 | 27* | PERCY,J.H. | INCLUDING MATERIAL STRENGTH | AD410386 |
| JCP | 43 | 1381 | 65 | 93 | PEREZ-ALBUE. | P EFFECT, COMPRESSIB OF 7 CRYSTALS | (UILL) |
| SC | RR-69-560 | | 69 | 57 | PERRY,F.C. | LASER INTERFEROMETER, MEASURE G | (SL) |
| APL | 17 | 478 | 70 | 57 | PERRY,F.C. | E-BEAM INDUCED STRESS IN SOLIDS | (SL) |
| JAP | 41 | 5017 | 70 | 57 | PERRY,F.C. | RESPONSE OF METALS TO E-BEAM | (SL) |
| QAM | 20 | 321 | 63 | 64 | PERZYNA,P. | CONSTIT EQNS,PLASTIC MTRLS | (POLAN) |
| JGR | 75 | 2063 | 70 | 110 | PETERSON,C. | HUGON, RELEASE ADIABATS FOR ROCKS | (SRI) |
| JGR | 74 | 2727 | 69 | 109* | PETERSON,C. | SHOCK COMPRESSION OF FELDSPARS | (CIT) |
| PRLET | 1 | 402 | 58 | 78* | PETERSON,G.A | SW COMPRESSION OF ALUMINUM | (SRI) |
| JCP | 3 | 307 | 68 | 27 | PETSCHEK,A. | DIFFCE EQNS, 2D ELASTIC FLOW | |
| NOL | TR 66- 42 | | 66 | 43 | PIACESI,R. | SPALLATION-EFFECT OF STRENGTH PROP | AD641874 |
| JPCS | 27 | 1783 | 66 | 20* | PIACESI,D. | CURVATURE IN VELOC RELATION,METALS | (NOL) |
| DASA | | 2495 | 70 | 29* | PIECHOCKI,J. | SHEP CALCS, HE IN AL (SHI) | AD708784 |

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| AIAAJ | 8 | 2147 | 70 | 28*PIECHOCKI,J. | SHAPE CALCS, IMPACT, LAMINATE | (SHI) |
| JAP | 13 | 503 | 42 | 31 PIPES,L.A. | OPERATIONAL THEORY,LONGIT IMPACT | (HARVU) |
| JAP | 38 | 876 | 67 | 75*PITT,C.H. | DISLOC VELOC IN NI CRYSTAL | (UUTAH) |
| ACADE(BK) | | | 70 | 16 POND,R.B. | IMPACT METALLURGY (IN KINSLOW 70) | |
| PREV | 75 | 1552 | 49 | 32*PONDROM,W.L. | ELASTIC PULSES IN METAL RODS | (UTEX) |
| GEOPH | 20 | 780 | 55 | 35 POSTMA,G.W. | WAVES IN STRATIFIED MEDIUM | (SHELL) |
| JAP | 41 | 4913 | 70 | 104 POWELL,B.E. | 4TH ORDER ELAST CONSTS-FUSED QUARTZ | |
| AFML | TR 70-295 | | 70 | 80 PRATER,R.F. | IMPACT-AL ALLOYS | AD718461 |
| BJAP | 15 | 751 | 64 | 50*PRICE,J.H. | DYNAM P MEAS TO 300 KBAR | |
| BJAP | 2 | 275 | 69 | 75*PRICE,J.H. | RELEASE PATHS, AL,MG TO 200 KB | (UKAEA) |
| JCP | 43 | 1050 | 65 | 81 PRIETO,F.E. | COHESIVE ENERGY OF CU | (MEXIC) |
| JAP | 41 | 3876 | 70 | 20 PRIETO,F.E. | EQN FOR THE SHOCK ADIABAT | (MEXIC) |
| JAP | 42 | 296 | 71 | 20 PRIETO,F.E. | REDUCED HUGONIOTS | (MEXIC) |
| JPCS | 33 | 797 | 72 | 72 PRIETO,F.E. | V DERIV OF G AT ZERO P | (UPARI) |
| AFML | TR 68-311 | | 70 | 38*PUPPO,A. | MICRODYNAMICS, WAVE PROPAG (WHITT) | AD702108 |
| JAP | 42 | 4592 | 71 | 103 QUACH,A. | PVT PROPS, AMORPHOUS POLYMERS | |
| JPCS | 26 | 1157 | 65 | 63*QUIGLEY,T.J. | TAITS LAW. I. ALKALI METALS | (CUNY) |
| PRS | 103 | 622 | 23 | 31*QUINNEY,H. | EXPTS WITH HOPKINSON BAR | |
| ACADE(BK) | | | 70 | 16 RAE ,W.J. | CALCS-SHOCK FROM IMPACT (IN KINSLOW 70) | |
| AFWL | TR 65-115 | | 65 | 29*RAINER,J.H. | GROUND MOTION,NUCLEAR BURSTS | AD475498 |
| JPCS | 33 | 1921 | 72 | 93 RAMACHANDRAN | CALCITE-G,ELAST WAVES | (INDIA) |
| NOL | TR 63-141 | | 63 | 77*RAND,J.L. | STRESS WAVES IN AL | (NOL) |
| QAM | | 277 | 71 | 17 RANIECKI,B. | EFFECT OF DYNAMIC THERMAL EXPANSION | (POLAN) |
| JAP | 39 | 4853 | 68 | 59 RAO ,D.V.G. | LASER-INDUCED CHANGES IN SILICON | |
| LMSC | -6-78-69-3 | | 69 | 56 RAUCH,J.E. | DEPTH-DOSE FOR FEBETRON E-BEAM | |
| JAM | 36 | 181 | 69 | 14 RAUSCH,P.J. | SW PROPAG,STRAIN-HARDENING MTRL | (AEROS) |
| JAM | 36 | 340 | 69 | 14 RAUSCH,P.J. | HEATING TIME EFFECT ON STRESS WAVES | (AEROS) |
| JAP | 36 | 462 | 65 | 59 READY,J.F. | EFFECTS OF LASER RADIATION | |
| ACADE | BK | | 71 | 58 READY,J.F. | EFFECTS OF LASER RADIATION | |
| ZAMP | 19 | 473 | 68 | 34 REDDY,D.P. | SW IN THIN PRESTRESSED ROD | |
| ACADE | BK | | 68 | 55*REED,R.D. | PHOTONS,LEPTONS INTO MATTER | |
| OPTIK | 27 | 86 | 68 | 55 REIMER,L. | MONTE-CARLO-RECHUNGEN | (UMUNS) |
| IIT | TR 68-181 | | 68 | 29*REINGOLD,E.M | SLAM CODE. IV. EXTRAS | AD840138 |
| JCP | 43 | 1050 | 65 | 81*RENERO,C. | COHESIVE ENERGY OF CU | (MEXIC) |
| JAP | 41 | 3876 | 70 | 20*RENERO,C. | EQN FOR THE SHOCK ADIABAT | (MEXIC) |
| JAP | 42 | 296 | 71 | 20*RENERO,C. | REDUCED HUGONIOTS | (MEXIC) |
| PHYSR | 108 | 196 | 57 | 73*RICE,M.H. | SW COMPRESSION OF 27 METALS | (LASL) |
| ACADE(BK) | | 1 | 58 | 73 RICE,M.H. | COMPRESSION SOLIDS BY SW (IN SEITZ VOL 6) | |
| JAP | 34 | 364 | 63 | 83*RICE,M.H. | EP PROPERTIES OF IRON | (LASL) |
| JPCS | 26 | 483 | 65 | 76 RICE,M.H. | SW P-V, ALKALI METALS | (LASL) |
| GEOPH | 36 | 798 | 71 | 36 RICHARDS,P.G | ELASTIC WAVES,STRATIFIED MEDIA | |
| AIAAJ | 4 | 1537 | 66 | 37*RILEY,M.B. | ELASTIC PROPS, COMPOSITES | (AFML) |
| DOVER | BK | 256 | 54 | 47 RINEHART,J. | METALS UNDER IMPULSIVE LOADS | |
| GE | R64SD13 | | 64 | 28 RINEY,T.D. | CALCS,HYPERVEL IMPACT,PICWIC CODE | AD430606 |
| GE | R64SD64 | | 64 | 8 RINEY,T.D. | IMPACT-CALC VS EXPT | AD606123 |
| GE | R64SD87 | | 64 | 7*RINEY,T.D. | PEAK P IN HYPERVELOC IMPACT | AD452991 |
| PERGA(BK) | | 419 | 65 | 30 RINEY,T.D. | CALCS,HYPERVEL CRATERING (IN OSTRACH) | |
| ACADE(BK) | | | 70 | 16 RINEY,T.D. | CALCS OF HYPERVEL IMPACT (IN KINSLOW 70) | |
| SSS | SR-267 | | 70 | 110 RINEY,T.D | STRESS EFFECTS, POROUS EARTH | AD712852 |
| DNA | 27251 | | 71 | 41 RINEY,T.D. | WAVES,POROUS GEOLOGIC COMPOSITES | AD732023 |
| ONR | ACR-184 | | 70 | 52*ROBERTS,R. | FIFTH DETONATION SYMPOSIUM | |
| JPCS | 31 | 619 | 70 | 94 ROBERTS,R.W. | BORN MODEL, NA,K HALIDES | (CWRU) |

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| PREVB | 3 | 1406 | 71 | 94*ROBERTS,R.W. | G OF ALKALI HALIDES | (UNC) |
| IIT | TR | 68-181 | 68 | 29*ROBINSON,R.R | SLAM CODE. IV. EXTRAS | AD840138 |
| JPCS | 30 | 2091 | 69 | 76*ROGERS,F.J. | COMPRESSIBILITY, ALKALI METALS | (LRL) |
| JIMA | 3 | 21 | 67 | 37*ROGERS,T.G. | COATED ELASTIC FIBER | (UNOTT) |
| JAP | 38 | 876 | 67 | 75 ROHDE,R.W. | DISLOC VELOC IN NI CRYSTAL | (UUTAH) |
| JAP | 40 | 2988 | 69 | 88 ROHDE,R.W. | SHOCK-LOADED TUNGSTEN AT 950 C | (SL) |
| JAP | 42 | 878 | 71 | 87 ROHDE,R.W. | SW BEHAVIOR,TANTALUM,25 AND 900 C | (SL) |
| JCP | 51 | 425 | 69 | 102*ROMO,P.C. | THERMAL EXPAN, POLYETHYLENE | (NARC) |
| JAM | 31 | 223 | 64 | 37*ROSEN,B.W. | ELASTIC MODULI,FIBER COMPOSITES | (UPENN) |
| JGR | 74 | 2727 | 69 | 109*ROSENBERG,J. | SHOCK COMPRESSION OF FELDSPARS | (CIT) |
| AFML | TR | 68-266 | 68 | 30 ROSENBLATT,M | 2D STEEP CODE- IMPACT | AD683055 |
| DASA | | 2495 | 70 | 29 ROSENBLATT,M | SHEP CALCS, HE IN AL (SHI) | AD708784 |
| AFML | TR | 70-254 | 71 | 28 ROSENBLATT,M | STEEP CALC-AL CRATER FORMATION | AD721468 |
| JAP | 43 | 3191 | 72 | 56 ROSENSTEIN,M | 2 MEV E-BEAM DOSE-DEPTH, POLYSTYRENE | |
| JPCS | 27 | 267 | 66 | 84 ROTTER,C.A. | ULTRASONIC EQN STATE, IRON. I. | (CASE) |
| JAP | 39 | 3328 | 68 | 59 ROUSSEAU,D.L | LASER-CAUSED CHARGED PARTICLES | |
| ACADE | BK | | 68 | 55 ROY ,R.R. | PHOTONS,LEPTONS INTO MATTER | |
| PREV | 164 | 929 | 67 | 66 ROYCE,E.B. | SW COMPRESS-ELECTRON CONFIG | (LRL) |
| JAP | 39 | 4610 | 68 | 100*ROYCE,E.B. | SHOCK COMPRESS,ALUMINA | (SRI) |
| JAP | 41 | 2443 | 70 | 75*ROYCE,E.B. | SW-INDUCED CHANGES, FE-CR-NI ALLOYS | (LRL) |
| ACADE(BK) | | 51 | 71 | 18*ROYCE,E.B. | SW IN SOLIDS-EXPT METHS (IN CALDIROLA) | |
| ACADE(BK) | | 80 | 71 | 18 ROYCE,E.B. | HI-P EQNS STATE FROM SW DATA (IN CALDIROLA) | |
| UCRL | | 51121 | 71 | 70 ROYCE,E.B. | GRAY-3 PHASE METAL EQN OF STATE | (UCRL) |
| JAP | 42 | 1897 | 71 | 113*ROYCE,E.B. | YIELD STRENGTHS,SILICON | |
| JAP | 25 | 528 | 54 | 32 RUBIN,R.J. | LONGIT WAVES IN PRESTRESSED ROD | (APL) |
| JAP | 37 | 4758 | 66 | 50*RUDERMAN,M.H | IMMERSED-FOIL METHOD | (SRI) |
| PSS | 1 | 507 | 67 | 95*RUOFF,A.L. | P DERIVS,ELAST CONSTS, NABR,KF | (CORNU) |
| JAP | 38 | 4976 | 67 | 20 RUOFF,A.L. | LINEAR SHOCK VEL VS PARTICLE VEL | (CORNU) |
| JAP | 40 | 3151 | 69 | 79*RUOFF,A.L. | P DEPENDENCE, AL ELASTIC CONSTANTS | (CORNU) |
| JAP | 41 | 652 | 70 | 94*RUOFF,A.L. | P,T DEP,ELAST CONSTS RBCL,RBBR,RBI | (CORNU) |
| PREVB | 3 | 1406 | 71 | 94 RUPPIN,R. | G OF ALKALI HALIDES | (UNC) |
| PREVB | 3 | 1497 | 71 | 70 RUPPIN,R. | G FOR BORN-VON KARMAN LATTICES | (UNC) |
| JPCS | 33 | 945 | 72 | 95 RUPPIN,R. | G OF LITHIUM HALIDES | (UNC) |
| JGR | 76 | 1370 | 71 | 70 RYABININ,YU. | PLASTICITY RESULTING FROM PRESSURE | (USSR) |
| SOVPA | 17 | 115 | 68 | 67 RYBAKOV,A.P. | EMPIRICAL EQNS-DENS,SOUND,PR IN SW | (USSR) |
| ACADE(BK) | | 181 | 64 | 25*SACK,S. | TENSOR CODE (IN ALDER 64 VOL 3) | |
| JPCS | 26 | 1523 | 65 | 93*SAMARA,G.A. | BISMUTH COMPRESSIBILITY | (USAEL) |
| JCP | 8 | 343 | 71 | 29 SAMEH,A.H. | DISCRETE APPROACH, E/P WAVES | (UILL) |
| JASA | 27 | 550 | 55 | 32*SAUER,J.A. | ULTRASONIC DISPERSION IN RODS | (PENSU) |
| PERGA | BK | | 65 | 30*SCANLAN,R.H. | DEVELOPMENTS IN MECHANICS, VOL 2 PT 2 | |
| APLET | 13 | 279 | 68 | 57*SCHALLHORN,D | RESPONSE SOLIDS TO PULSED E-BEAM | (HDL) |
| IEEE | NS- | 242 | 69 | 55 SCHALLHORN,D | E-BEAM DEPTH-DOSE PROFILES | |
| JAP | 42 | 3463 | 71 | 57*SCHALLHORN,D | 1D RESPONSE TO E-BEAM PULSE | (HDL) |
| JAP | 42 | 3474 | 71 | 57*SCHALLHORN,D | TEMP-DEPENDENCE,SI,GE,INSB,E-BEAM | (HDL) |
| JGR | 75 | 4035 | 70 | 42 SCHIFFMAN,R. | STRESS COMPONS,POROUS MEDIUM | (UCOLO) |
| JAP | 37 | 3259 | 66 | 89*SCHMIDT,D.N. | SW PROPAG,POROUS SOLIDS | (SRI) |
| JAP | 43 | 3367 | 72 | 91*SCHMIDT,D.N. | POROUS CU,FE,U,POLYURETHANE | (SRI) |
| JCM | 5 | 286 | 71 | 36*SCHULER,K.W. | WAVES IN LAMINATES, MIXTURES | (SL) |
| JAP | 43 | 2204 | 72 | 51 SCHOCK,R.N. | QUASISTATIC DEFORMATION TO 5 KB | (LLL) |
| JPCS | 26 | 537 | 65 | 95*SCHUELE,D.E. | P DERIVS,ELAST CONSTS, NACL,KCL | (CIT) |

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| JAM | 38 | 888 | 71 | 34*SCHULTZ,A.B. | UNLOADING BDY,LONGIT PROPAGATION | (UILL) |
| WILEY | (BK) | 5 | 65 | 54 SCHUMACHER,B | LAWS FOR ELECTRON PENETRATION | (ORF) |
| JAP | 40 | 4503 | 69 | 14 SCHWARTZ,M. | GRAPHIC DISPLAY,PLANE EP WAVES | (FA) |
| ASME | (BK) | | 69 | 13 SCOTT,R.A. | TRANSIENT ANISOTR WAVES(IN MIKLOWITZ) | |
| RMP | 35 | 231 | 63 | 54 SCOTT,W.T. | SMALL-ANGLE SCATTERING | |
| JAP | 43 | 3367 | 72 | 91*SEAMAN,L. | POROUS CU,FE,U,POLYURETHANE | (SRI) |
| ACADE | BK | | 59 | 21 SEDOV,L.I. | SIMILARITY AND DIMENSIONAL METHODS | |
| IJNLM | 6 | 615 | 71 | 17 SEDOV,A. | VISCO-ELASTIC WAVES | (IOWAS) |
| AFF | 5 | 97 | 52 | 46 SELBERG,H.L. | WAVES FROM SPH,CYL CAVITIES | |
| JAP | 37 | 4737 | 66 | 76*SELVITELLA,J | HUGONIOT EQN STATE, ALKALI METALS | (GCA) |
| BAPS | 14 | 385 | 69 | 59 SERY,R.S. | (ABST)MANG PROP CHANGES,LASER IRRAD | (NOL) |
| JGR | 74 | 1435 | 69 | 68 SHAPIRO,J.N. | SW TO ISOTHERMAL EQN STATE | (UCLA) |
| JGR | 74 | 1439 | 69 | 68*SHAPIRO,J.N. | G PARAMETER AND EQNS OF STATE | (UCLA) |
| JAP | 37 | 2304 | 66 | 33*SHARMA,O.P. | LASER IRRAD OF SOLID BAR | |
| JAP | 42 | 5335 | 71 | 70*SHARMA,Y.P. | ELAST CONSTS, AL,CU,NI | (INDIA) |
| GEOPH | 7 | 144 | 42 | 46 SHARPE,J.A. | ELASTIC WAVES, EXPLOSIONS.I. | |
| JCP | 51 | 425 | 69 | 102 SHEN,M. | THERMAL EXPAN, POLYETHYLENE | (NARC) |
| JAP | 43 | 4348 | 72 | 102*SHEN,M. | G OF CRYSTALLINE POLYETHYLENE | (UCALB) |
| BRL | CR | 36 | 71 | 26 SHEN,S. | MCDIT-3 CHARACTERISTICS CODE | AD724734 |
| INTER | BK | | 60 | 47 SHEWMON,P.G. | RESP METALS TO HIGH-VELOC DEFORMATION | |
| DASA | | 2164 | 68 | 11 SHIEH,R.C. | WAVES IN NONLIN STRAIN-HARDENING | AD679653 |
| JAP | 42 | 387 | 71 | 55 SHIMIZU,R. | MONTE CARLO CALCS | (OSAKA) |
| CESW | 1 | 39 | 65 | 33*SHKHINEK,K.N | WAVE PROPAG, FINITE BAR | |
| JASA | 30 | 552 | 58 | 33*SHOOK,C.A. | END-LOADED BAR. I. THEORY | (LEHIG) |
| MONO | BK | | 68 | 12*SHORT,N.M. | SHOCK METAMORPHISM,NATURAL MATERIALS | |
| JCM | 3 | 454 | 70 | 38*SIERAKOWSKI | SUPERPOSITION, WAVE PROPAG | (IOWA) |
| JAP | 43 | 3191 | 72 | 56*SILVERMAN,J. | 2 MEV E-BEAM DOSE-DEPTH, POLYSTYRENE | |
| JAP | 42 | 4592 | 71 | 103*SIMHA,R. | PVT PROPS, AMORPHOUS POLYMERS | |
| JGR | 69 | 1117 | 64 | 106 SIMMONS,G. | COMPR WAVE VELOC IN MINERALS | (HARVU) |
| JGR | 69 | 1123 | 64 | 106 SIMMONS,G. | SHEAR WAVES IN ROCKS. I. | |
| IEEE | 53 | 1337 | 65 | 106 SIMMONS,G. | ULTRASONICS IN GEOLOGY | |
| PEPI | 2 | 69 | 69 | 100 SIMMONS,G. | UNIVERSAL EQNS STATE,OXIDES,SILICATES | (MIT) |
| JGR | 77 | 826 | 72 | 94*SIMMONS,G. | ALPHA QUARTZ,ALK HALIDE PROPS | (MIT) |
| JETP | 25 | 876 | 67 | 9*SIMONENKO,V. | DISCONTINUITIES, SHOCK ADIABATS | (USSR) |
| DOKLA | 3 | 738 | 58 | 102*SINITSYN,M.V | T, SP HT OF PLEXIGLAS | (USSR) |
| SOVPHS | 5 | 196 | 63 | 83*SINITSYN,V.A | E-P WAVES IN IRON,STEEL | (USSR) |
| JAP | 39 | 349 | 68 | 92 SIRDESHMUKH | G OF ZNO,BEO,ZNS,CDS | (INDIA) |
| JAM | 24 | 59 | 59 | 32 SKALAK,R. | IMPACT OF CIRCULAR BAR | (COLUM) |
| JAP | 41 | 4913 | 70 | 104*SKOVE,M.J. | 4TH ORDER ELAST CONSTS-FUSED QUARTZ | |
| PHYSR | 57 | 744 | 40 | 62 SLATER,S.C. | G FOR INCOMPRESSIBLE METALS | (MIT) |
| PHYSR | 122 | 713 | 58 | 75*SMITH,C.S. | ELAST CONSTS, CU,AG,AU TO 10 KBAR | (CASE) |
| JPCS | 25 | 1279 | 64 | 95*SMITH,C.S. | P DERIVS,ELAST CONSTS, LIF,NAF | (CIT) |
| JPCS | 27 | 267 | 66 | 84*SMITH,C.S. | ULTRASONIC EQN STATE, IRON. I. | (CASE) |
| JPCS | 31 | 619 | 70 | 94*SMITH,C.S. | BORN MODEL, NA,K HALIDES | (UNC) |
| JAP | 40 | 4776 | 69 | 60*SMITH,H.P. | CLEAN SURFACES BY LASER IRRAD | (UCALB) |
| JAP | 43 | 2555 | 72 | 42 SMITH,R.E. | ELAST CONSTS,C FIBERS,COMPOSITES | (UCC) |
| JAP | 37 | 3416 | 66 | 87 SOGA,N. | BULK MODULI, TA,W AT HIGH T | (BELLT) |
| JGR | 72 | 6754 | 67 | 66*SOGA,N. | CORRESP STATES-A RESTRICTION | (LGO) |
| JIMA | 3 | 21 | 67 | 37*SPENCER,A.J. | COATED ELASTIC FIBER | (UNOTT) |
| PREV | 98 | 1597 | 55 | 54 SPENCER,L.V. | THEORY OF ELECTRON PENETRATION | |

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| JGR | 75 | 2073 | 70 | 100 SPETZLER,H. | MGO TO 8 KBAR, 800 K | (CIT) |
| JPCS | 33 | 1727 | 72 | 96 SPETZLER,H. | NACL-DATA TO 8 KBAR AND 800 C | (SL) |
| JAP | 42 | 3667 | 71 | 36 SPIELVOGEL,L | PLANE WAVES IN LAYERED MEDIA | |
| JGR | 76 | 7052 | 71 | 100*SPRIGGS,R.M. | ELAST MODULI-SINTERED NI OXIDE | (LEHIG) |
| JPCS | 33 | 1921 | 72 | 93*SRINIVASAN,R | CALCITE-G,ELAST WAVES | (INDIA) |
| NOL | TR 70-141 | | 70 | 74*STECHER,F.P. | LISTS OF PROPERTIES,METALS,PLASTICS | (NOL) |
| IJES | 4 | 483 | 66 | 42*STEEL,T.R. | CONSTIT EQNS, INTERACTING CONTINUA | (UNEWC) |
| QJMAM | 20 | 57 | 67 | 42 STEEL,T.R. | INTERACTING CONTINUA | (UNEWC) |
| NCSU | TR 70- 11 | | 70 | 80*STEELE,R.S. | EXPT-PLASTIC WAVES, 1100F ALUMINUM | AD717328 |
| UCRL | 51246 | | 72 | 44 STEFFAN,K.L. | SPALL THRESHOLDS,6061T6 ALUMINUM | (LLL) |
| SPSS | 12 | 1312 | 70 | 92*STEPANOV,A.V | T DEPEND, ELAST CONSTS OF TE | |
| JAM | 37 | 1190 | 70 | 39*STERN,M. | WAVES, FIBER-REINF MTRLS | (UTEXA) |
| JAM | 38 | 8 | 71 | 40*STERN,M. | DIFFUSING CONTINUUM THEORY | (UTEX) |
| JAM | 26 | 528 | 59 | 37 STERNBERG,E. | SW PROPAG,NONHOM ELAST MEDIA | (BROWN) |
| PREV | 126 | 620 | 62 | 54*STERNGLASS,E. | 1-10 KEV RANGE INTERPRETATION | (WRL) |
| JAP | 42 | 5665 | 71 | 80 STEVENS,A.L. | DYNAMIC FRACTURE, ALUMINUM | (SL) |
| JAP | 43 | 988 | 72 | 44*STEVENS,A.L. | CONTINUUM MEASURES,SPALL DAMAGE | (SL) |
| BAPS | 13 | DEC | 68 | 59 STEVERDING,B | (ABST)SHOCK GENR, PULSED LASER | (REDST) |
| PPS | 92 | 1090 | 67 | 94*STRATHEN,R.E | 3RD ORDER CONSTS, KCL,NACL,LIF | (UEXET) |
| LOCKH | SB-63- 31 | | 63 | 2 STROMER,P.R. | BIB-SW PROPAG IN SOLIDS | AD419449 |
| SSP | 13 | 81 | 62 | 47*STRONG,H.M. | METALS AT HIGH T,P | (GE) |
| JAM | 35 | 408 | 68 | 35 SUN ,C.T. | T-HARM WAVES,STRATIFIED MEDIUM | (NWU) |
| JAM | 35 | 467 | 68 | 35 SUN ,C.T. | CONTINUUM THEORY, LAMINATED MEDIUM | (NWU) |
| JAM | 35 | 689 | 68 | 35*SUN ,C.T. | VIBRATIONS OF LAMINATED BODY | (NWU) |
| JCM | 3 | 454 | 70 | 38 SUN ,C.T. | SUPERPOSITION, WAVE PROPAG | (IOWA) |
| PREVB | 3 | 4007 | 71 | 80 SUZUKI,T. | 2ND,3RD ORDER CONSTS, AL,PB | (UILL) |
| SAMSO | TR 70-417 | | 70 | 36 SVE ,C. | OBLIQUE THERMOELAST WAVES | AD715895 |
| JPHYD | 4 | 1077 | 71 | 20 SWAN,G.W. | THEORY FOR US-UP SLOPE | (WSU) |
| SSP | 11 | 41 | 60 | 47 SWENSON,C.A. | PHYSICS AT HIGH PRESSURE | (ISU) |
| JPCS | 29 | 1337 | 68 | 67 SWENSON,C.A. | CUBIC SOLIDS | (GBRIT) |
| WASHU | 69-3 | | 69 | 79*SWIFT,R.P. | AL+PLANE CYLIN STRESS WAVES | AD695703 |
| JGR | 71 | 3985 | 66 | 65 TAKEUCHI,H. | EQNS STATE FROM SW EXPTS | (CALUB) |
| JAP | 43 | 4016 | 72 | 19 TASI,J. | NONLIN SHOCK GROWTH IN 1-D LATTICE | (SUNY) |
| JCM | 5 | 456 | 71 | 40 TAUCHERT,T. | EXPTS-STRESS WAVES,WOVEN FABRICS | (UKENT) |
| AIAAJ | 9 | 1492 | 71 | 40 TAUCHERT,T. | STRESS WAVES IN COMPOSITE RODS | (UKENT) |
| IJNLM | 6 | 27 | 71 | 21 TAULBEE,D.B. | SIMIL SOLNS, IMPACT PROBS | (SUNYB) |
| CDRC | RC329 | | 42 | 31 TAYLOR,G.I. | PLASTIC WAVE IN IMPACTED WIRE | |
| JAP | 34 | 364 | 63 | 83 TAYLOR,J.W. | EP PROPERTIES OF IRON | (LASL) |
| JAP | 36 | 3146 | 65 | 83 TAYLOR,J.W. | DISLOC DYNAMICS AND YIELDING | (LASL) |
| ACADE(BK) | | 293 | 70 | 74*TAYLOR,J.W. | EQN OF STATE FROM SW WORK (IN KINSLOW) | |
| WSU | SDL 70- 02 | | 71 | 70*TAYLOR,S.M. | EQN OF STATE OF SOLIDS.4.(BRL) | AD719307 |
| JCM | 5 | 130 | 71 | 40*TAYLOR,S.M. | SW PARAMS, 2-COMPON MIXTURE | (WSU) |
| PREV | 153 | 765 | 67 | 75*THOMAS,J.F. | THRMAL PROPS-NOBLE METAL ANHARMONCY | (UILL) |
| BJAP | 15 | 883 | 64 | 55*THOMAS,R.N. | 5-30 KEV RANGE-ENERGY.I. | (UCAMB) |
| BJAP | 15 | 1283 | 64 | 55*THOMAS,R.N. | 5-30 KEV RANGE-ENERGY.II. | (UCAMB) |
| JMM | 6 | 759 | 57 | 3 THOMAS,T.Y. | DECAY OF WAVES IN ELASTIC SOLIDS | (INDIU) |
| PNAS | 57 | 1195 | 67 | 66 THOMAS,T.Y. | HYDROSTATIC P EFFECT,TENSILE STRENG | (INDU) |
| PNAS | 60 | 1102 | 68 | 67 THOMAS,T.Y. | STRESS-STRAIN RLATIONS, CRYSTALS | AD680278 |
| AFSWCTDR | 62-134 | | 62 | 75*THOMER,G. | SW COMPRESSION OF MG,LUCITE,PE | AD291568 |
| SC | RR-66-601 | | 67 | 23*THOMPSON,R.J | WONDY-1D E/P COMPUTER CODE | (SI ) |

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| JGR | 74 | 981 | 69 | 68 THOMSEN,L. | HIGH-T EQN STATE OF SOLIDS | (LAMON) |
| JPCS | 31 | 2003 | 70 | 69 THOMSEN,L. | 4TH ORDER ANHARMONIC EQN STATE | (LAMON) |
| JGR | 76 | 1342 | 71 | 17 THOMSEN,L. | SHEAR MODULI, HIGH P+T | (FRANC) |
| SC | RR | 66-602 | 67 | 24 THORNE,B.J. | TOODY 2-D COMPUTER CODE | (SL) |
| SC | RR-70-571 | | 71 | 30 THORNE,B.J. | COMPARISON-NUMERICAL TECHNIQUES,SW CALC | |
| ACADE(BK) | | 1 | 64 | 8 THURSTON,R.N | WAVE PROPAG,FLUIDS,SOLIDS(IN MASON V1A,63) | |
| IEEE | 53 | 1320 | 65 | 64 THURSTON,R.N | ULTRASONIC DATA AND TD OF SOLIDS | (BELLT) |
| JAP | 36 | 1624 | 65 | 104*THURSTON,R.N | ELASTIC MODULI, QUARTZ | (BELLT) |
| LASL | LA | 4013 | 68 | 44 THURSTON,R. | SPALL CRITERIA FOR NUMERICAL CALCS | (LASL) |
| MCGRA | BK | 416 | 34 | 4 TIMOSHENKO,S | THEORY OF ELASTICITY | (UMICH) |
| JAM | 36 | 497 | 69 | 36 TING,T.C.T. | WAVE FRONT ANALYSIS | (UILL) |
| JAM | 38 | 441 | 71 | 34 TING,T.C.T. | INIT SPEED,E/P BOUNDARIES IN ROD | (UILL) |
| AFIT | TR | 69-7 | 69 | 39 TORVIK,P.J. | SW PROPAG,COMPOSITE MTRL | AD690504 |
| JCM | 4 | 296 | 70 | 39 TORVIK,P.J. | SW PROPAG,COMPOSITE MTRL | (AFIT) |
| JPCS | 23 | 395 | 62 | 63*TOSI,M.P. | MIE-GRUNEISEN, HILDEBRAND EQNS | (ANL) |
| JAP | 42 | 878 | 71 | 87*TOWNE,T.L. | SW BEHAVIOR,TANTALUM,25 AND 900 C | |
| HDP | 11/2 | 153 | 62 | 6 TRUELL,R. | ULTRASONIC STRESS WAVES IN SOLIDS | (GTBRI) |
| BAMS | 58 | 577 | 52 | 3 TRUESDELL,C. | REVIEW OF MURNAGHAN BOOK | |
| ARMA | 8 | 263 | 61 | 5 TRUESDELL,C. | THEORY, WAVES IN FINITE ELAST STRAIN | (JHU) |
| JAP | 34 | 172 | 63 | 43*TRULIO,J.G. | SPALL MECHANISM IN LUCITE | (BOEIN) |
| JGR | 71 | 2601 | 66 | 9 TSAI,D.H. | SHOCK PROPAG IN CUBIC LATTICE | (NBS) |
| JCM | 3 | 500 | 69 | 38 TSOU,F.K. | HUGONIOT OF COMPOSITES | (DREXE) |
| AFML | TR | 69-152 | 70 | 39 TSOU,F.K. | EXPT-HUGONIOT,1D FIBER-REINF | AD716560 |
| JAP | 43 | 957 | 72 | 41*TSOU,F.K. | STEADY SW, 1D FIBROUS COMPOS | (DREXE) |
| JASA | 27 | 550 | 55 | 32 TU ,L.Y. | ULTRASONIC DISPERSION IN RODS | (PENSU) |
| IJFM | 4 | 431 | 68 | 44 TULER,F.R. | TIME-DEP OF DYNAM FRACTURE | (SL) |
| JAP | 42 | 5665 | 71 | 80*TULER,F.R. | DYNAMIC FRACTURE, ALUMINUM | (SL) |
| DNA | | 2740T | 71 | 44 TULER,F.P. | TENSILE STRESS SPALL CRITERION | (ETI) |
| WSU | SDL | 70- 02 | 71 | 70*TUNG,C.T. | EQN OF STATE OF SOLIDS.4.(BRL) | AD719307 |
| JAM | 21 | 63 | 54 | 4*TUPPER,S.J. | STEEL CYL HITTING RIGID TARGET | (BROWN) |
| JAM | 38 | 888 | 71 | 34 TUSCHAK,P.A. | UNLOADING BDY,LONGIT PROPAGATION | (OSU) |
| JAM | 37 | 339 | 70 | 60*TZUNG,F. | STRESS FROM IMPULSIVE RADIATION | (UCALS) |
| DOKLA | 5 | 317 | 60 | 63*URLIN,V.D. | INTERPOL EQN STATE, METALS | (USSR) |
| JETP | 15 | 477 | 62 | 63*URLIN,V.D. | COMPRESSION OF POROUS AL,CU,PB,NI | (USSR) |
| JETP | 22 | 341 | 66 | 65 URLIN,V.D. | HIGH-P MELTING IN SW | (USSR) |
| JAP | 40 | 3962 | 69 | 20 URTIEW,P.A. | REFL SW VEL VS PART VEL IN SOLIDS | (LRL) |
| UCRL | | 51109 | 71 | 17*URTIEW,P.A. | SHOCK WAVES, METAL VAPORIZATION | (UCRL) |
| JPCS | 31 | 2329 | 70 | 74 VAIDYA,S.N. | COMPRESSIB,18 METALS TO 45 KBAR | (UCLA) |
| JPCS | 32 | 2545 | 71 | 76 VAIDYA,S.N. | ALKALI METALS TO 45 KBAR | (UCLA) |
| JPCS | 33 | 1377 | 72 | 74 VAIDYA,S.N. | 22 ELEMENTS TO 45 KBAR | (UCLA) |
| JMP | 44 | 227 | 65 | 8 VALANIS,K.C. | WAVES,LINEAR VISCOELAST SOLIDS | (ISU) |
| JCM | 3 | 454 | 70 | 38*VALANIS,K.C. | SUPERPOSITION, WAVE PROPAG | (IOWA) |
| SPSS | 12 | 1312 | 70 | 92 VALIEV,A.A. | T DEPEND, ELAST CONSTS OF TE | |
| UCRL | | 50108 | 66 | 74 VAN THIEL,M. | COMPENDIUM OF SHOCK WAVE DATA | (UCRL) |
| JAP | 40 | 893 | 69 | 79*VAN THEIL,M. | DYNAM YIELD, 2024-T4 AL AT 313 KBAR | (LRL) |
| JAP | 40 | 3776 | 69 | 79*VAN THEIL,M. | UNLOADING WAVES, 2024-T4 AL | (LRL) |
| JMPS | 13 | 17 | 65 | 8 VARLEY,E. | NON-LINEARITY EFFECT,ACCEL WAVE | (NPL) |
| ARMA | 19 | 215 | 65 | 8 VARLEY,E. | ACCEL FRONTS, VISCOELAST MTRLS | (UNOTT) |
| ASME | (BK) | | 69 | 13 VARLEY,E. | MODUL SIMPLE WAVES (IN MIKLOWITZ 69) | |
| SOVSS | 5 | 653 | 63 | 64 VASHCHENKO,V | DERIVING GRUNEISEN CONSTANT | (USSR) |
| JAP | 38 | 3271 | 67 | 43*VENABLE,D. | DETERMINING DYNAMIC TENSILE PROPS | (LASL) |

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| JAP | 39 | 3222 | 68 | 92*VENABLE,D. | SHOCK INDUCED TRANSITION-ANTIMONY | (LASL) |
| DOKLA | 16 | 322 | 71 | 87*VERESHCHAGIN | TA MELTING CURVE TO 60 KBAR | (USSR) |
| PREVB | 2 | 2167 | 70 | 95 VETELINO,J.F | LATTICE DYN, CS HALIDES | (UMAIN) |
| PREVB | 3 | 4398 | 71 | 95*VETELINO,J.F | LATTICE DYN,ALKALI HALIDES | (UMAIN) |
| CREND270A | | 1440 | 70 | 91 VINH TUONG,M | CONSTS ELAST,FIBER UNIDIRECTIONNELLES | |
| JETP | 23 | 777 | 66 | 95 VORONOV,F.F. | P EFFECT,ELAST PROPS, RBCL, RBI | (USSR) |
| IIT | TR | 68-181 | 68 | 29 WACHOWSKI,A. | SLAM CODE.III. VERSION 3 | AD840137 |
| IIT | TR | 68-181 | 68 | 29*WACHOWSKI,A. | SLAM CODE. IV. EXTRAS | AD840138 |
| PHYSR | 122 | 1754 | 61 | 100 WACHTMAN,J.B | YOUNGS MOD VS T, OXIDES | (NBS) |
| JAP | 33 | 922 | 62 | 104 WACKERLE,J. | SW COMPRESSION OF QUARTZ | (LASL) |
| JPS | 7 | 201 | 69 | 103 WADA,Y. | G,THERMAL PROPS OF POLYMERS | (UTOKY) |
| AIAAJ | 8 | 2147 | 70 | 28*WAGNER,M.H. | SHAPE CALCS, IMPACT, LAMINATE | (SHI) |
| JAP | 40 | 2639 | 69 | 92*WALKER,F.E. | DYNAMIC COMPRESSION OF TNT | (LRL) |
| RMP | 37 | 57 | 65 | 8 WALLACE,D.C. | DYNAMICS OF STRESSED CRYSTALS | (SL) |
| PREV | 162 | 776 | 67 | 66 WALLACE,D.C. | THERMOELASTICITY, STRESSED MTRLS | (SL) |
| JAM | 34 | 937 | 67 | 60 WALSH,E.K. | 1D WAVES IN ELAST NONCONDUCTORS | (MELLO) |
| JASA | 41 | 1320 | 67 | 10*WALSH,E.K. | ACCEL WAVES IN ELASTIC BODIES | (CASE) |
| JAP | 42 | 1098 | 71 | 90 WALSH,J.B. | BULK MOD P DERIV, POROUS MTRLS | |
| PHYSR | 97 | 1544 | 55 | 73 WALSH,J.M. | EQN STATE METALS,SW MEASUREMENTS | (LASL) |
| PHYSR | 108 | 196 | 57 | 73 WALSH,J.M. | SW COMPRESSION OF 27 METALS | (LASL) |
| ACADE(BK) | | 1 | 58 | 73*WALSH,J.M. | COMPRESSION SOLIDS BY SW (IN SEITZ VOL 6) | |
| GA | | 5119 | 64 | 30 WALSH,J.M. | THEORY, HYPERVEL IMPACT | AD436251 |
| GAMD | | 8497/2 | 68 | 30 WALSH,J.M. | EULERIAN E/P METH. 2. FD EQNS | AD678566 |
| ACADE(BK) | | | 70 | 16*WALSH,J.M. | THEORY OF IMPACT (IN KINSLOW 70) | |
| SSS | | 3SR-350/1 | 71 | 25*WALSH,J.M. | HELP-2D E/P EULERIAN CODE | AD726459 |
| SSS | | 3SR-350/2 | 71 | 25*WALSH,J.M. | HELP-FORTRAN LISTINGS | AD726460 |
| SSS | | 3SR-201 | 71 | 25*WALSH,J.M. | HELP CALCS-ARMOR PENETRATION | AD725998 |
| UCRL | | 51102 | 71 | 18 WALTON,O.R. | A WAVE PROPAGATION MODEL | (UCRL) |
| ARMA | 22 | 79 | 66 | 65 WANG,C.C. | TD OF NON-LIN MTRLS | (JHU) |
| JGR | 74 | 1451 | 69 | 109 WANG,C.Y. | EQN OF STATE, PERICLASE | (UCBER) |
| NOL | TR | 71-208 | 72 | 103 WARFIELD,R.W | BULK MOD OF POLYETHYLENE OXIDE | (NOL) |
| MCGRA | BK | | 63 | 52*WARSCHAUER,D | SOLIDS UNDER PRESSURE | (HARVU) |
| NOL | TR | 63-141 | 63 | 77 WASER,W.H. | STRESS WAVES IN AL | (NOL) |
| JAP | 40 | 2639 | 69 | 92 WASLEY,R.J. | DYNAMIC COMPRESSION OF TNT | (LRL) |
| QJMAM | 22 | 261 | 68 | 14 WATERSTON,R. | 1-D SW AND ACCEL FRONTS | (USTRA) |
| IJSS | 6 | 1157 | 70 | 84 WATSON,H. | DYNAMIC STRESS-STRAIN FOR IRON | (SMU) |
| NOL | TR | 66- 42 | 66 | 43*WATT,J.W. | SPALLATION-EFFECT OF STRENGTH PROP | AD641874 |
| KN | | 70-59(R) | 70 | 38 WEBSTER,L. | UNIDIR FIBERS, FINITE ELEM METHOD | (KN) |
| KN | | 70-760(R) | 70 | 38 WEBSTER,L. | WAVES IN COMPOSITES | (KN) |
| JGR | 77 | 826 | 72 | 94 WEIDNER,D.J. | ALPHA QUARTZ,ALK HALIDE PROPS | (MIT) |
| BAPS | 13 | DEC | 68 | 59*WERKHEISER,A | (ABST)SHOCK GENR, PULSED LASER | (REDST) |
| PHILM | 12 | 157 | 65 | 98*WHITE,G.K. | GE,SI THERMAL EXPAN AT LOW TEMP | (AUSTR) |
| JAP | 37 | 430 | 66 | 100 WHITE,G.K. | GRUNEISEN PARAMETER OF MGO | (BELLT) |
| JASA | 27 | 310 | 55 | 35 WHITE,J.E. | ELASTIC WAVES IN LAMINATES | |
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