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7. PERFORMING ORGANIZATION NAMES AND ADDRESSES
Gordon Research Conferences, Inc.
512 Liberty Lane

West Kingston, RI 02892 -1502

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES)
U.S. Army Research Office
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14. ABSTRACT

15. SUBJECT TERMS

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a. REPORT	b. ABSTRACT	c. THIS PAGE			Valery Milner
UU	UU	UU	UU		19b. TELEPHONE NUMBER 604-822-3399

RPPR Final Report
as of 10-Apr-2020

Agency Code:

Proposal Number: 74863CHCF **Agreement Number: W911NF-19-1-0128**
INVESTIGATOR(S):

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Organization: **Gordon Research Conferences, Inc.**
Address: 512 Liberty Lane, West Kingston, RI 028921502
Country: USA
DUNS Number: 075712877 EIN: 050300482
Report Date: 29-Feb-2020 Date Received: 10-Apr-2020
Final Report for Period Beginning 01-Mar-2019 and Ending 30-Nov-2019
Title: 2019 Quantum Control of Light and Matter Gordon Research Conference and Gordon Research Seminar
Begin Performance Period: 01-Mar-2019 **End Performance Period:** 30-Nov-2019
Report Term: 0-Other
Submitted By: Ph.D. Nancy Gray Email: grants@grc.org
Phone: (401) 360-1505
Distribution Statement: 1-Approved for public release; distribution is unlimited.

STEM Degrees: 0 **STEM Participants:** 40

Major Goals: Quantum control uses coherent electromagnetic fields to manipulate dynamical processes at the microscopic scale in order to reach a particular target state or realize a desired evolution in time. The ultimate goal is to control complex processes at the heart of chemical reaction dynamics, quantum information science or biological functionality. Until recently, this goal was out of reach due to the overwhelmingly large number of relevant degrees of freedom, often coupled to one another and the surrounding environment. With the latest technological advances and progress in our understanding of complex systems, the boundaries of control are constantly expanding, finally allowing to tame complex quantum systems.

The goal of this conference is to bring together theorists and experimentalists pushing the frontiers in this diverse field at the intersection of AMO physics, physical chemistry, quantum information science, and applied mathematics. It will highlight new avenues for quantum control from artificial intelligence all the way to neuroscience, focusing on the control of ultrafast and ultracold dynamics, many-body correlations and quantum thermodynamics, with applications in spectroscopy and imaging, nano-plasmonics and quantum technologies. Poster sessions are an essential and traditionally very lively part of the Conference on Quantum Control of Light and Matter. Every participant is encouraged to present highlights from her or his most recent, and preferably yet unpublished, work.

The conference will be preceded by a two-day Gordon Research Seminar organized by and for early-career scientists. In addition to offering tutorial lectures on various aspects of quantum control, it will provide them with a unique opportunity to discuss their own research with their peers.

Accomplishments: Quantum control uses coherent electromagnetic fields to manipulate dynamical processes at the microscopic scale in order to reach a particular target state or realize a desired evolution in time. The ultimate goal was to control complex processes at the heart of chemical reaction dynamics, quantum information science or biological functionality. Until recently, this goal was out of reach due to the overwhelmingly large number of relevant degrees of freedom, often coupled to one another and the surrounding environment. With the latest technological advances and progress in our understanding of complex systems, the boundaries of control are constantly expanding, finally allowing to tame complex quantum systems.

The goal of this conference was to bring together theorists and experimentalists pushing the frontiers in this diverse field at the intersection of AMO physics, physical chemistry, quantum information science, and applied mathematics. It highlighted new avenues for quantum control from artificial intelligence all the way to neuroscience, focusing on the control of ultrafast and ultracold dynamics, many-body correlations and quantum thermodynamics,

with applications in spectroscopy and imaging, nano-plasmonics and quantum technologies. Poster sessions are an essential and traditionally very lively part of the Conference on Quantum Control of Light and Matter. Every participant was encouraged to present highlights from her or his most recent, and preferably yet unpublished, work.

The conference was preceded by a two-day Gordon Research Seminar (GRS) organized by and for early-career scientists. In addition to offering tutorial lectures on various aspects of quantum control, it provided them with a unique opportunity to discuss their own research with their peers.

The use of coherent control techniques to solve problems in quantum mechanical systems is a burgeoning field that crosses multiple disciplines in science and technology. The ever-widening scope of this field comes about naturally from the vast application space of the control methods that continue to be developed and refined. From nascent applications in chemical reaction control, the field of quantum control has expanded to solve problems spanning from physics and chemistry to biology.

This Gordon Research Seminar (GRS) was the inaugural Seminar held in the field of quantum control of light and matter. Such Seminars provide graduate students and postdoctoral researchers a unique opportunity to share their cutting-edge, unpublished research with one another. This allows young researchers to develop their presentation skills, learn about the wide range of topics in the field, and expand their network of peers and mentors, all in a welcoming and collaborative environment. In particular, this Seminar focused on the interdisciplinary nature of the field and seeks to draw from the wide variety of work being done on this field.

Training Opportunities: Speakers, discussion leaders, poster presenters and attendees simultaneously contributed to and benefited from the collective skills and experience shared throughout the conference. The funding provided by was invaluable to the success of the Conference.

Results Dissemination: The final program has been posted on the GRC website.

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

GORDON RESEARCH CONFERENCES

FINAL PROGRESS REPORT
Army Research Office
Quantum Control of Light and Matter GRC/GRS

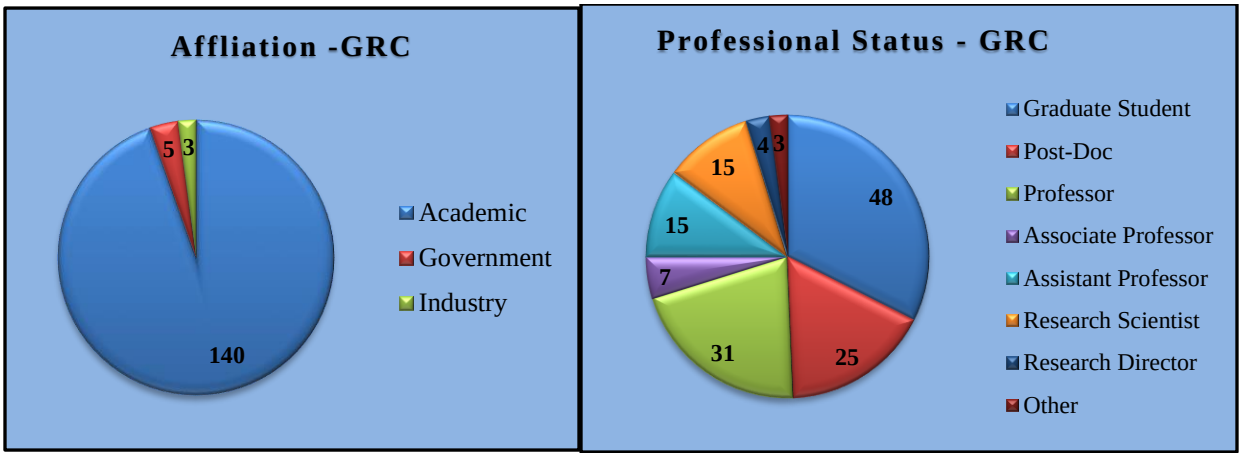
Grant Number W911NF1910128

Operational Summary

The Gordon Research Conference (GRC) and Gordon Research Seminar (GRS) on Quantum Control of Light and Matter were held at Salve Regina University in Newport, Rhode Island from August 10-16, 2019. The meeting covered a variety of scientific topics and the content presented was highly rated by participants.

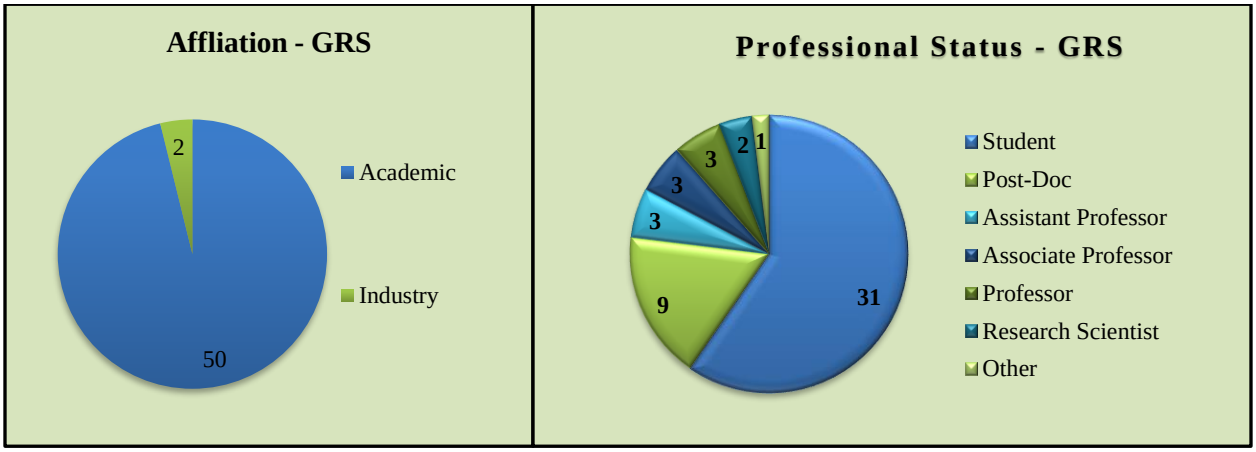
Conference Participants

The Conference was well-attended with 148 participants. Scientists from academia represented 95% of the participants while attendees from government accounted for 3% and those from industry totaled 2%. The meeting also attracted a strong mix of young investigators and senior scientists. Students and post-docs accounted for 49% of all attendees. Approximately 21% of the participants at the 2019 meeting were women.



Seminar Participants

The Seminar was well-attended with 52 participants. Scientists from academia represented 96% of the participants while attendees from industry accounted for 4%. Students and post docs combined accounted for 77% of all attendees. Approximately 52% of the participants at the 2019 seminar were women.



Conference Program

Quantum control uses coherent electromagnetic fields to manipulate dynamical processes at the microscopic scale in order to reach a particular target state or realize a desired evolution in time. The ultimate goal was to control complex processes at the heart of chemical reaction dynamics, quantum information science or biological functionality. Until recently, this goal was out of reach due to the overwhelmingly large number of relevant degrees of freedom, often coupled to one another and the surrounding environment. With the latest technological advances and progress in our understanding of complex systems, the boundaries of control are constantly expanding, finally allowing to tame complex quantum systems.

The goal of this conference was to bring together theorists and experimentalists pushing the frontiers in this diverse field at the intersection of AMO physics, physical chemistry, quantum information science, and applied mathematics. It highlighted new avenues for quantum control from artificial intelligence all the way to neuroscience, focusing on the control of ultrafast and ultracold dynamics, many-body correlations and quantum thermodynamics, with applications in spectroscopy and imaging, nano-plasmonics and quantum technologies. Poster sessions are an essential and traditionally very lively part of the Conference on Quantum Control of Light and Matter. Every participant was encouraged to present highlights from her or his most recent, and preferably yet unpublished, work.

The conference was preceded by a two-day Gordon Research Seminar (GRS) organized by and for early-career scientists. In addition to offering tutorial lectures on various aspects of quantum control, it provided them with a unique opportunity to discuss their own research with their peers.

The use of coherent control techniques to solve problems in quantum mechanical systems is a burgeoning field that crosses multiple disciplines in science and technology. The ever-widening scope of this field comes about naturally from the vast application space of the control methods that continue to be developed and refined. From nascent applications in chemical reaction control, the field of quantum control has expanded to solve problems spanning from physics and chemistry to biology.

This Gordon Research Seminar (GRS) was the inaugural Seminar held in the field of quantum control of light and matter. Such Seminars provide graduate students and postdoctoral researchers a unique opportunity to share their cutting-edge, unpublished research with one another. This allows young researchers to develop their presentation skills, learn about the wide range of topics in the field, and expand their network of peers and mentors, all in a welcoming and collaborative environment. In particular, this Seminar focused on the interdisciplinary nature of the field and seeks to draw from the wide variety of work being done on this field.

Conference Budget

Funding provided by the Army Research Office supported partial registration for 7 graduate students and 2 post docs at the GRC.

Conference Feedback

Participants had an opportunity to provide feedback at the end of the Conference. The feedback collected from the meeting was extremely positive. Evaluations included numerous positive remarks regarding the informal interactions among colleagues, diversity of topics and excellent talks. The feedback collected from the seminar included positive comments regarding the poster sessions, diverse topics and the discussions that followed each presentation.

GRC would like to thank the Army Research Office for its continued support of the meetings. The contributions received have been critical to the success of the conferences and are having a measurable impact in advancing the frontiers of science worldwide.

Dr. Christiane P. Koch, GRC Chair
University of Kassel

Dr. Valery Milner, GRC Co- Chair
University of British Columbia

Dr. Nancy Ryan Gray
President and Chief Executive Officer
Gordon Research Conferences

Quantum Control of Light and Matter

Gordon Research Conference

Coherent Control of Quantum Systems with Increasing Complexity

August 11 - 16, 2019

Chairs Christiane P. Koch and Valery Milner

Vice Chairs Kenji Ohmori and Regina de Vivie-Riedle

Conference Program

Sunday	
2:00 pm - 9:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	Keynote Session: New Challenges for Quantum Control: From Artificial Intelligence to Neuroscience Discussion Leader: Tommaso Calarco (Forschungszentrum Jülich, Germany)
7:40 pm - 7:50 pm	Opening Remarks
7:50 pm - 8:10 pm	Introduction by Discussion Leader
8:10 pm - 8:40 pm	Roman Krems (University of British Columbia, Canada) "Machine Learning with Small Data as a Physics Research Tool: From Extrapolation Across Phase Transitions to Inverse Problems to Quantum Machine Learning"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Paul Brumer (University of Toronto, Canada) "Coherent Control at Two Extremes: Cold Collisions and Neuronal Currents"
9:20 pm - 9:30 pm	Discussion
Monday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Quantum Engineering Discussion Leader: Herschel Rabitz (Princeton University, USA)
9:00 am - 9:20 am	Introduction by Discussion Leader
9:20 am - 9:50 am	Peter Zoller (University of Innsbruck, Austria) "Hybrid Classical-Quantum Quantum Simulations of Many-Body Systems: Theory and Experiment"
9:50 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:00 am	Ben Sussman (National Research Council, Canada) "Quantum Control of Quantum Optics with Diamond Phonons"
11:00 am - 11:10 am	Discussion
11:10 am - 11:40 am	Haidong Yuan (Chinese University of Hong Kong, Hong Kong SAR China) "Quantum Control in Quantum Metrology and Quantum Hypothesis Testing"
11:40 am - 11:50 am	Discussion
11:50 am - 12:20 pm	Sebastien Gleyzes (Laboratoire Kastler Brossel, Sorbonne Université / CNRS, France) "Optimal Control for Quantum Metrology with Rydberg Atoms"
12:20 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time

3:00 pm - 4:00 pm	The GRC Power Hour™ The GRC Power Hour™ is designed to address challenges women face in science and issues of diversity and inclusion. The program supports the professional growth of all members of our communities by providing an open forum for discussion and mentoring. Organizer: Regina de Vivie-Riedle (Ludwig Maximilian University of Munich, Germany)
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Cavity-Based Control Discussion Leader: Ignacio Franco (University of Rochester, USA)
7:30 pm - 7:50 pm	Introduction by Discussion Leader
7:50 pm - 8:20 pm	Vahid Sandoghdar (Max Planck Institute for the Science of Light, Germany) "Quantum Optics with Organic Molecules"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 8:45 pm	Selected from Poster Abstracts: Aditya Venkatramani (Harvard University, USA) "Repulsive Photons via Interaction in a Quantum Nonlinear Medium"
8:45 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Joel Yuen-Zhou (University of California, San Diego, USA) "Molecules in Cavities: Polariton Chemistry"
9:20 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
8:30 am - 9:00 am	Group Photo
9:00 am - 12:30 pm	Chiral Systems Discussion Leader: Thomas Baumert (University of Kassel, Germany)
9:00 am - 9:20 am	Introduction by Discussion Leader
9:20 am - 9:50 am	Ilya Averbukh (Weizmann Institute of Science, Israel) "Chiral Molecules in Laser Fields with Twisted Polarization"
9:50 am - 10:00 am	Discussion
10:00 am - 10:15 am	Selected from Poster Abstracts: Lea Ress (Universität Würzburg, Germany) "Accessing Chiral Dynamics via Broadband Time-Resolved Circular Dichroism Spectroscopy"
10:15 am - 10:20 am	Discussion
10:20 am - 10:50 am	Coffee Break
10:50 am - 11:20 am	Valerie Blanchet (Centre Lasers Intenses et Applications, Université de Bordeaux, France) "New Approach to Probe the Chirality of a Molecular Potential"
11:20 am - 11:30 am	Discussion
11:30 am - 11:45 am	Selected from Poster Abstracts: David Ayuso (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Germany) "Locally and Globally Chiral Fields for Ultimate Control of Chiral Light-Matter Interaction"
11:45 am - 11:50 am	Discussion
11:50 am - 12:20 pm	Reinhard Dörner (University of Frankfurt, Germany) "Ionization and Fragmentation of Chiral Molecules: What We Can Learn from Coincidence Spectroscopy"
12:20 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm Poster Session

6:00 pm - 7:00 pm Dinner

7:30 pm - 9:30 pm Cold Collisions
Discussion Leader: Rosario Gonzalez-Ferez (Universidad de Granada, Spain)

7:30 pm - 7:50 pm Introduction by Discussion Leader

7:50 pm - 8:20 pm Stefan Willitsch (University of Basel, Switzerland)
"New Quantum Methods for the Manipulation, Spectroscopy and State-to-State Chemistry of Single Molecular Ions"

8:20 pm - 8:30 pm Discussion

8:30 pm - 8:45 pm Selected from Poster Abstracts: Illya Tyutyunnykov (Weizmann Institute of Science, Israel)
"Echo in a Single Molecule"

8:45 pm - 8:50 pm Discussion

8:50 pm - 9:20 pm Edvardas Narevicius (Weizmann Institute of Science, Israel)
"Collisions Between Cold Molecules in a Superconducting Magnetic Trap"

9:20 pm - 9:30 pm Discussion

Wednesday

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm Many-Body Quantum Control
Discussion Leader: Birgitta Whaley (University of California, Berkeley, USA)

9:00 am - 9:20 am Introduction by Discussion Leader

9:20 am - 9:50 am Mikhail Lemeshko (Institute of Science and Technology Austria, Austria)
"Far-from-Equilibrium Dynamics of Molecules in Helium Nanodroplets"

9:50 am - 10:00 am Discussion

10:00 am - 10:15 am Alicia Kollar (Joint Quantum Institute, University of Maryland, USA)
"Lattice Simulators in Circuit QED"

10:15 am - 10:20 am Discussion

10:20 am - 10:50 am Coffee Break

10:50 am - 11:20 am Frank Stienkemeier (University of Freiburg, Germany)
"Extending Coherent Multidimensional Spectroscopy to Dilute Samples and into the XUV"

11:20 am - 11:30 am Discussion

11:30 am - 11:45 am Vladimir Malinovsky (U.S. Army Research Laboratory, USA)
"Quantum Optimal Control of Motion in an Atomic Fountain: Adiabaticity and Robustness"

11:45 am - 11:50 am Discussion

11:50 am - 12:20 pm Mohammad Hafezi (Joint Quantum Institute, University of Maryland, USA)
"Quantum Optics Toolbox Applied to Correlated States of Electrons"

12:20 pm - 12:30 pm Discussion

12:30 pm - 1:30 pm Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm Poster Session

6:00 pm - 7:00 pm Dinner

7:00 pm - 7:30 pm Business Meeting
Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair

7:30 pm - 9:30 pm Electron Dynamics

	Discussion Leader: David Tannor (Weizmann Institute of Science, Israel)
7:30 pm - 7:50 pm	Introduction by Discussion Leader
7:50 pm - 8:20 pm	Stefanie Gräfe (Friedrich Schiller University Jena, Germany) "Strong-Field Control of Molecular Dynamics"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 8:45 pm	Selected from Poster Abstracts: Tom Ring (University of Kassel, Germany) "Excited-State Rabi Cycling Near the Ionization Threshold After Multiphoton Excitation: A General Concept?"
8:45 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Paul Corkum (University of Ottawa, Canada) "Vector Beams, High Harmonic Generation and THz Solenoidal Magnetic Fields"
9:20 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Nanostructures Discussion Leader: Mikhail Lukin (Harvard University, USA)
9:00 am - 9:20 am	Introduction by Discussion Leader
9:20 am - 9:50 am	Javier Aizpurua (Materials Physics Center, CSIC-UPV/EHU, Spain) "Tracing the Ultrafast Dynamics of Electron Currents in Plasmonic Nanogaps"
9:50 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:00 am	Tobias Brixner (University of Wuerzburg, Germany) "Phase-Controlled Pulse Sequences for Ultrafast Micro- and Nano-Spectroscopy"
11:00 am - 11:10 am	Discussion
11:10 am - 11:40 am	Hui Cao (Yale University, USA) "Coherence Control of Complex Lasers"
11:40 am - 11:50 am	Discussion
11:50 am - 12:20 pm	Maxim Sukharev (Arizona State University, USA) "Electrodynamics of Exciton-Plasmon Systems: Strong Coupling and Beyond"
12:20 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Control in Quantum Thermodynamics Discussion Leader: Ronnie Kosloff (Hebrew University of Jerusalem, Israel)
7:30 pm - 7:50 pm	Introduction by Discussion Leader
7:50 pm - 8:20 pm	Alexia Auffèves (CNRS, France) "The Energetic Side of Quantum Noise"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 8:45 pm	Selected from Poster Abstracts: Sharly Fleischer (Tel Aviv University, Israel) "Echo Spectroscopy in Multi-Level Molecular Rotors"
8:45 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Ulrich Poschinger (Johannes Gutenberg University of Mainz, Germany) "A Spin Heat Engine Coupled to a Harmonic-Oscillator Flywheel"

9:20 pm - 9:30 pm Discussion

Friday

7:30 am - 8:30 am Breakfast

9:00 am Departure

Contributors

Gordon Research Conferences
Frontiers of Science

THORLABS

CINSaT Center for Interdisciplinary Nanostructure Science and Technology

SFB 1319 ELCH

mks | Spectra-Physics

Kurt J. Lesker Company

Quantum Control of Light and Matter

Gordon-Kenan Research Seminar

Quantum Control and Its Applications Across Scientific Disciplines

August 10 - 11, 2019

Chairs Carrie A. Weidner and Ilan M. Hurwitz

Conference Program

Saturday	
2:00 pm - 5:00 pm	Arrival and Check-in
3:30 pm - 3:45 pm	Introductory Comments by GRC Site Staff / Welcome from the GRS Chair
3:45 pm - 4:30 pm	Keynote Session: Dissociation of Polyatomic Radical Cations Driven by Vibrational Wave Packet Dynamics Discussion Leader: Tom Ring (University of Kassel, Germany)
3:45 pm - 3:50 pm	Introduction by Discussion Leader
3:50 pm - 4:25 pm	Katharine Tibbetts (Virginia Commonwealth University, USA) "Dissociation of Polyatomic Radical Cations Driven by Vibrational Wave Packet Dynamics"
4:25 pm - 4:30 pm	Discussion
4:30 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Quantum Control in Molecular and Photonic Systems Discussion Leader: Aditya Venkatramani (Harvard University, USA)
7:30 pm - 7:40 pm	Introduction by Discussion Leader
7:40 pm - 8:00 pm	Stefano Tomasi (University of Sydney, Australia) "Coherent Enhancements of Light Harvesting: Classification and Control"
8:00 pm - 8:05 pm	Discussion
8:05 pm - 8:25 pm	Eyal Bahar (Tel Aviv University, Israel) "Coherent Control of the Non-Instantaneous Nonlinear Response in Resonant Nanostructures"
8:25 pm - 8:30 pm	Discussion
8:30 pm - 8:50 pm	Alicia Magann (Princeton University, USA) "Quantum Tracking Control of Molecular Orientation"
8:50 pm - 9:00 pm	Discussion
9:00 pm - 9:20 pm	Igor Cherepanov (Institute of Science and Technology Austria, Austria) "An Angulon Quasiparticle Perspective on Rotational Dynamics of Molecules Trapped Inside Superfluid Helium Nanodroplets"
9:20 pm - 9:30 pm	Discussion
Sunday	
7:30 am - 8:30 am	Breakfast
9:00 am - 11:00 am	Quantum Control in Atomic Systems Discussion Leader: Victor Albert (California Institute of Technology, USA)
9:00 am - 9:10 am	Introduction by Discussion Leader
9:10 am - 9:30 am	Tejumade Durowade (University of Illinois at Chicago, USA) "Micro-Magnetic Simulations of Nano-Magnetic Elements for Quantum Cellular Automata"
9:30 am - 9:35 am	Discussion
9:35 am - 9:55 am	Patricia Vindel Zandbergen (Temple University, USA) "Electron Correlation in Strong Field Double Ionization of Cyclohexadiene"
9:55 am - 10:00 am	Discussion

10:00 am - 10:20 am Boris Braverman (University of Ottawa, Canada)
"Near-Unitary Spin Squeezing with Ytterbium"

10:20 am - 10:30 am Discussion

10:30 am - 10:50 am Emily Townsend (Joint Quantum Institute, University of Maryland / National Institute of Standards and Technology, USA)
"Understanding the Emergence of Quantum Properties in Atom-Based Systems for Quantum Simulation and Control"

10:50 am - 11:00 am Discussion

11:00 am - 12:30 pm Poster Session
Coffee will be served in the poster area from 11:00 am - 11:30 am

12:30 pm - 1:30 pm Lunch

1:30 pm - 2:30 pm Control of Open Quantum Systems
Discussion Leader: Andres Ordonez (Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Germany)

1:30 pm - 1:35 pm Introduction by Discussion Leader

1:35 pm - 1:55 pm Daniel Basilewitsch (University of Kassel, Germany)
"Identification of Decoherence-Free Subspaces via Quantum Optimal Control"

1:55 pm - 2:00 pm Discussion

2:00 pm - 2:20 pm Alejandro Somoza (Ulm University, Germany)
"Dissipation-Assisted Matrix Product Factorization"

2:20 pm - 2:25 pm Discussion

2:25 pm - 2:30 pm Closing Remarks

2:30 pm - 3:00 pm Evaluation Period
Fill in GRS Evaluation Forms

3:00 pm Seminar Concludes

Contributors

KENAN INSTITUTE ENGINEERING, TECHNOLOGY & SCIENCE NC STATE UNIVERSITY

mks | Spectra-Physics

Quantum Control of Light and Matter GRC Registration List

Name	Organization	Participation
Aerts, Antoine	Université libre de Bruxelles	Poster Presenter
Aizpurua, Javier	Materials Physics Center, CSIC-UPV/EHU	Speaker
Albert, Victor V	California Institute of Technology	Poster Presenter
Alexander, Byron J	Stellenbosch University	Poster Presenter
Arenz, Christian	Princeton University	Poster Presenter
Aroch, Aviv	Hebrew University	Poster Presenter
Auffèves, Alexia S	CNRS	Speaker
Averbukh, Ilya	Weizmann Institute of Science	Speaker
Ayuso, David	Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy	Speaker
Bahar, Eyal	Tel Aviv University	Poster Presenter
Barik, Sabyasachi	Institute for Research in Electronics and Applied Physics	Poster Presenter
Basilewitsch, Daniel	University of Kassel	Poster Presenter
Baumert, Thomas G	University of Kassel	Discussion Leader
Bhattacharjee, Paraj T	Johns Hopkins University Applied Physics Laboratory	Poster Presenter
Bienias, Przemyslaw	Joint Quantum Institute, Univ. of Maryland	Poster Presenter
Bighin, Giacomo	Institute of Science and Technology Austria	Poster Presenter
Blanchet, Valerie	Centre Lasers Intenses et Applications, Université de Bordeaux	Speaker
Blech, Alexander	Universität Kassel	Poster Presenter
Braverman, Boris	University of Ottawa	Poster Presenter
Brixner, Tobias	University of Wuerzburg	Speaker
Brumer, Paul W	University of Toronto	Speaker
Burdick, Ryan	University of Michigan	Poster Presenter
Calarco, Tommaso	Forschungszentrum Jülich	Discussion Leader
Cao, Hui	Yale University	Speaker
Chang, Bo Y	Seoul National University	Poster Presenter
Cherepanov, Igor N.	Institute of Science and Technology Austria	Poster Presenter
Chong, Yonuk	Korea Research Institute of Standards and Science	Attendee
Chuang, Chern	Department of Chemistry, University of Toronto	Poster Presenter
Corkum, Paul	University of Ottawa	Speaker
de Vivie-Riedle, Regina	Ludwig Maximilian University of Munich	Vice Chair
Dehghani, Hossein	Joint Quantum Institute, University of Maryland	Poster Presenter
Dellantonio, Luca	Institute for Quantum Computing, University of Waterloo	Poster Presenter
Dörner, Reinhard	University of Frankfurt	Speaker
Doucet, Emery	University of Massachusetts Lowell	Poster Presenter
Drobnykh, Elena	Arizona State University	Poster Presenter
Dutt, Gurudev	University of Pittsburgh	Poster Presenter
Dutta, Subhojit	University of Maryland	Poster Presenter
Ezra, Bar	the hebrew university	Poster Presenter
Fleischer, Sharly K	Tel Aviv University	Speaker
Fordyce, Jordan A M	Department of Physics & Astronomy, UBC	Poster Presenter
Franco, Ignacio	University of Rochester	Discussion Leader
Gao, Ting	Hebei Normal University	Poster Presenter
Garzon Ramirez, Antonio J	University of Rochester	Poster Presenter
Gevorgyan, Hayk	"St. Kliment Ohridski" Sofia University	Poster Presenter
Gleyzes, Sebastien	Laboratoire Kastler Brossel, Sorbonne Université / CNRS	Speaker

Goerz, Michael H	U.S. Army Research Lab	Poster Presenter
Goetz, Ruben Esteban	Department of Physics, Kansas State University	Poster Presenter
Gonzalez-Ferez, Rosario	Universidad de Granada	Discussion Leader
Gräfe, Stefanie	Friedrich Schiller University Jena	Speaker
Greenman, Loren	Kansas State University	Attendee
Haase, Jan F	Institute for Quantum Computing, University of Waterloo	Poster Presenter
Hafezi, Mohammad	Joint Quantum Institute, University of Maryland	Speaker
Halasz, Gabor J	University of Debrecen	Poster Presenter
Hu, Wenxiang	University of Rochester	Poster Presenter
Huo, Pengfei	University of Rochester	Poster Presenter
Jensen, Jesper HM	Aarhus University	Poster Presenter
Kamal, Archana	University of Massachusetts Lowell	Attendee
Kato, Shinya	PRESTO, JST / Waseda University	Poster Presenter
Keefer, Daniel	University of California, Irvine	Poster Presenter
Kim, Yong-Sung	Korea Research Institute of Standards and Science	Poster Presenter
Kim, Jinsung	IBM	Poster Presenter
Koch, Christiane P	University of Kassel	Chair
Kollar, Alicia	Joint Quantum Institute, University of Maryland	Speaker
Kosloff, Ronnie B	Hebrew University of Jerusalem	Discussion Leader
Krems, Roman	University of British Columbia	Speaker
Kurkcuoglu, Doga Murat	Los Alamos National Laboratory	Poster Presenter
Lee, Shang-Fan	Academia Sinica	Poster Presenter
Lee, Hangyeol	University of Kassel	Poster Presenter
Lemeshko, Mikhail	Institute of Science and Technology Austria	Speaker
Levonian, David	Harvard University	Attendee
Li, Xiang	Caltech	Poster Presenter
Li, Wen-Di	The University of Hong Kong	Poster Presenter
Linpeng, Xiayu	University of Washington	Poster Presenter
Liu, Yuan	Brown University	Poster Presenter
Lukin, Mikhail	Harvard University	Discussion Leader
M. Estakhri, Nooshin	University of Michigan	Poster Presenter
MacPhail-Bartley, Ian D	The University of British Columbia	Poster Presenter
Magann, Alicia B	Princeton University	Poster Presenter
Majumder, Jonah A	MIT Lincoln Laboratory	Poster Presenter
Malinovsky, Vladimir S	U.S. Army Research Laboratory	Speaker
Mandal, Arkajit	University of Rochester	Poster Presenter
McCaul, Gerard	Tulane University	Poster Presenter
Mendez, Enrique	MIT	Poster Presenter
Metelmann, Anja	Free University Berlin	Poster Presenter
Milner, Valery	University of British Columbia	Chair
Milner, Alexander	University of British Columbia	Poster Presenter
Mohamed, Baghdad	Laboratoire Kaslter Brossel-ENS Sorbonne Universités	Poster Presenter
Müller, Stefan	Universität Würzburg	Poster Presenter
Narevicius, Edvardas	Weizmann Institute of Science	Speaker
Nematollahi, Fatemeh	Georgia State University	Poster Presenter
Ohmori, Kenji	Institute for Molecular Science, National Institutes of Natural Sciences	Vice Chair

Ordonez, Andres F	Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy	Poster Presenter
Pan, Feng	University of Wisconsin-Madison	Poster Presenter
Patsch, Sabrina	University of Kassel	Poster Presenter
Poschinger, Ulrich	Johannes Gutenberg University of Mainz	Speaker
Rabitz, Herschel	Princeton University	Discussion Leader
Reiter, Florentin	Harvard University	Poster Presenter
Ress, Lea	Universität Würzburg	Speaker
Reutzel, Marcel	University of Pittsburgh	Poster Presenter
Ring, Tom	University of Kassel	Speaker
Rodriguez-Rosenblueth, C	McGill University	Poster Presenter
Saenz, Alejandro	Humboldt-Universität zu Berlin	Poster Presenter
Sandoghdar, Vahid	Max Planck Institute for the Science of Light	Speaker
Satapathy, Sitakanta	Research Foundation at the City University of New York	Poster Presenter
Schnappinger, Thomas	Ludwig-Maximilians-Universität München	Poster Presenter
Sederberg, Shawn	University of Ottawa	Poster Presenter
Seif Tabrizi, Seyed Alireza	University of Maryland	Poster Presenter
Sierra, Diego	Department of Chemistry, Michigan State University	Poster Presenter
Singh, Seema	Sandia National Laboratories	Attendee
Sinhal, Mudit	Departement of Chemistry, University of Basel	Poster Presenter
Sola, Ignacio R	Universidad Complutense de Madrid	Poster Presenter
Somoza, Alejandro D	Ulm University	Poster Presenter
Stickler, Benjamin A.	Imperial College London	Poster Presenter
Stienkemeier, Frank	University of Freiburg	Speaker
Strombosky, Jerome D	Driven Quantum Technologies	Attendee
Sukharev, Maxim	Arizona State University	Speaker
Sussman, Ben	National Research Council	Speaker
Tannor, David	Weizmann Institute of Science	Discussion Leader
Teismann, Holger	Acadia University	Poster Presenter
Thanopoulos, Ioannis	University of Patras	Poster Presenter
Tibbetts, Katharine M	Virginia Commonwealth University	Poster Presenter
Tischler, Yaakov R	Bar-Ilan University	Poster Presenter
Tischler, Hadass	Jerusalem College of Technology	Poster Presenter
Tomasi, Stefano	University of Sydney	Poster Presenter
Tomita, Takafumi	National Institute of Natural Sciences, Institute for Molecular Science	Poster Presenter
Townsend, Emily	Joint Quantum Institute, University of Maryland / National Institute of Standards and Technology	Poster Presenter
Tresback, Jason	Center for Nanoscale Systems	Attendee
Tretiakov, Andrei A	University of Alberta	Poster Presenter
Tyutyunnykov, Illya	Weizmann Institute of Science	Speaker
Urbach, Elana K	Harvard University	Poster Presenter
Venkatramani, Aditya V	Harvard University	Speaker
Vibok, Agnes	University of Debrecen, Department of Theoretical Physics	Poster Presenter
Vindel Zandbergen, Patricia	Temple University	Poster Presenter
Wakamura, Hiroaki	Keio university	Poster Presenter
Wang, Xin	City University of Hong Kong	Poster Presenter
Wei, Xuan	IBM	Poster Presenter

Weidner, Carrie A	Aarhus University	Poster Presenter
Whaley, Birgitta	University of California, Berkeley	Discussion Leader
Willitsch, Stefan	University of Basel	Speaker
Word, Mi'Kayla	Virginia Commonwealth University	Poster Presenter
Yan, Fengli	Hebei Normal University	Poster Presenter
Yuan, Haidong	Chinese University of Hong Kong	Speaker
Yuen-Zhou, Joel	University of California, San Diego	Speaker
Zhdanovich, Sergey	SBQMI	Poster Presenter
Zhu, Hanyu	Rice University	Poster Presenter
Zifkin, Rigel	McGill University	Poster Presenter
Zlatanov, Kaloyan	Sofia University	Poster Presenter
Zoller, Peter	University of Innsbruck	Speaker

148 Attendees

Quantum Control of Light and Matter GRS Registration List

Name	Organization	Participation
Aerts, Antoine	Université libre de Bruxelles	Poster Presenter
Albert, Victor V	California Institute of Technology	Discussion Leader
Alexander, Byron J	Stellenbosch University	Poster Presenter
Bahar, Eyal	Tel Aviv University	Speaker
Basilewitsch, Daniel	University of Kassel	Speaker
Bighin, Giacomo	Institute of Science and Technology Austria	Poster Presenter
Blech, Alexander	Universität Kassel	Poster Presenter
Braverman, Boris	University of Ottawa	Speaker
Burdick, Ryan	University of Michigan	Poster Presenter
Cherepanov, Igor N.	Institute of Science and Technology Austria	Speaker
Dehghani, Hossein	Joint Quantum Institute, University of Maryland	Poster Presenter
Doucet, Emery	University of Massachusetts Lowell	Poster Presenter
Durowade, Tejumade	University of Illinois at Chicago	Speaker
Fordyce, Jordan A M	Department of Physics & Astronomy, UBC	Poster Presenter
Garzon Ramirez, Antonio J	University of Rochester	Poster Presenter
Gevorgyan, Hayk	"St. Kliment Ohridski" Sofia University	Poster Presenter
Hu, Wenxiang	University of Rochester	Poster Presenter
Lee, Hangyeol	University of Kassel	Poster Presenter
Levonian, David	Harvard University	Poster Presenter
Li, Xiang	Caltech	Poster Presenter
Linpeng, Xiayu	University of Washington	Poster Presenter
Liu, Yuan	Brown University	Poster Presenter
M. Estakhri, Nooshin	University of Michigan	Poster Presenter
Magann, Alicia B	Princeton University	Speaker
Majumder, Jonah A	MIT Lincoln Laboratory	Poster Presenter
Mandal, Arkajit	University of Rochester	Poster Presenter
Mendez, Enrique	MIT	Poster Presenter
Milner, Valery	University of British Columbia	Poster Presenter
Mohamed, Baghdad	Laboratoire Kaslter Brossel-ENS Sorbonne Universités	Poster Presenter
Müller, Stefan	Universität Würzburg	Poster Presenter
Ordonez, Andres F	Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy	Discussion Leader
Pan, Feng	University of Wisconsin-Madison	Poster Presenter
Patsch, Sabrina	University of Kassel	Poster Presenter
Reiter, Florentin	Harvard University	Poster Presenter
Ress, Lea	Universität Würzburg	Poster Presenter
Ring, Tom	University of Kassel	Discussion Leader
Rodriguez-Rosenblueth, C	McGill University	Poster Presenter
Sierra, Diego	Department of Chemistry, Michigan State University	Poster Presenter
Somoza, Alejandro D	Ulm University	Speaker
Tibbetts, Katharine M	Virginia Commonwealth University	Speaker
Tomasi, Stefano	University of Sydney	Speaker
Townsend, Emily	Joint Quantum Institute, University of Maryland / National Institute of Standards and Technology	Speaker
Tyutyunnykov, Illya	Weizmann Institute of Science	Poster Presenter
Urbach, Elana K	Harvard University	Poster Presenter

Venkatramani, Aditya V	Harvard University	Discussion Leader
Vindel Zandbergen, Patricia	Temple University	Speaker
Wakamura, Hiroaki	Keio university	Poster Presenter
Weidner, Carrie A	Aarhus University	Chair
Word, Mi'Kayla	Virginia Commonwealth University	Poster Presenter
Zifkin, Rigel	McGill University	Poster Presenter
Zlatanov, Kaloyan	Sofia University	Poster Presenter

51 Attendees