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**AD-A237 754**

**Final Project Report**



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**6TH WORKSHOP ON THE MATHEMATICAL FOUNDATIONS OF  
 PROGRAMMING SEMANTICS**

This workshop was the sixth in this series, which dates back to 1985. It was held on the campus of Queen's University, Kingston, Canada from May 16 to May 19, 1990. Since this meeting was a workshop, as opposed to a full conference, the intention was to keep the number of participants small to enhance the chance for intertaction among the attendees. There were 63 participants at the meeting from 7 countries, including Australia, Canada, Denmark, England, Scotland, Sweden, South Africa and the United States. Of these participants, 54 were faculty and 9 were graduate students. Three of the invited speakers were supported with ONR funds, while the rest were supported by funds from the Information and Technology Research Centre of Ontario, Canada, and the Advisory Research Committee of Queen's University. In addition to having reduced registration costs, the nine graduate students were provided additional support by ONR funds.

There were seven invited lectures and 25 contributed talks at the meeting. The invited talks were on three broad topics: polymorphism, applications of category theory to programming semantics, and concurrency. The specific topics included polymorphism and type theory, the use of functor categories to model ALGOL-like languages, linear logic, the semantics of dataflow networks, semantic models of CSP, and the use of probability theory to model nondeterminism. A copy of the Program is attached to this report.

The *Proceedings of the workshop* will consist of a special issue of the journal, *Theoretical Computer Science*, composed of papers which have been submitted by participants and refereed to the usual journal standards. Given the time it takes to compose such a volume and the backlog of TCS, we expect this issue to appear sometime within the next year. Copies of the *Proceedings* will be forwarded to the ONR when they become available.

**DISTRIBUTION STATEMENT A**  
 Approved for public release  
 Distribution Unlimited

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**91-03530**





Wednesday, 16 May Continued

3:30 pm

Coffee Break

4:00 pm

P. Gilmore

University of British Columbia

*A Logical foundation for programming semantics.*

4:30 pm

G. Tsiknis

University of British Columbia

*A logical foundation for category theory.*

5:00 pm

J.C. Shultis

Incremental Systems Corp.

*Epistemic type systems.*

Thursday, 17 May

9:00 am

P. Panangaden - Invited Speaker

Queen's University

10:00 am

S. Brookes

Carnegie Mellon University

*Towards a theory of parallel algorithms on concrete data structures.*

10:30 am

Coffee Break

11:00 am

R. Kent

University of Arkansas

*Processes as 2-dimensional relational structures.*

11:30 am

M. Kwiatkowska

University of Leicester

*Causality and fairness properties.*

12:00 pm

P. Mosses

Aarhus University

*The syntax and semantics of action notation.*

12:30 pm

Luncheon

2:00 pm

P. Scott - Invited Speaker

University of Ottawa

3:00 pm

P. O'Hearn

Queen's University

*Modelling non-interference using naturality.*

Thursday, 17 May Continued

3:30 pm

Coffee Break

4:00 pm

A. Pasztor

Florida International University

*Is Pnueli's temporal method complete for nondeterministic programs?*

4:20 pm

E. G. Manes

University of Massachusetts

*Commutative idempotent choice is inherently nondeterministic.*

5:00 pm

J. Zucker

McMaster University

*Provably computable total functions on abstract structures.*

Friday, 18 May

9:00 am

A. Roscoe - Invited Speaker

Oxford University

10:00 am

M. Mislove

Tulane University

*The Category of Continuous Posets.*

10:30 am

Coffee Break.

11:00 am

To Be announced

11:30 pm

S. Abramsky - Invited Speaker

Imperial College

12:30 pm

Luncheon

2:15 pm

Boarding the Island Princess

Cruise Boat

# 1 Brock Street OI

6:00 pm

Ferry departs from Wolfe island dock on Ontario Street to Wolfe Island.

See enclosed map of Kingston.

6:30 pm

Dinner at the General Wolfe Hotel., Wolfe Island

Turn Left after the ferry docks - app 5 minute walk.

Saturday, May 19

9:00 am

G. Plotkin - Invited Speaker  
University of Edinburgh

10:00 am

R. Heckman  
Universitaet des Saarlandes  
*Power domains and second order predicates.*

10:30 am

Coffee Break

11:00 am

M. Huth  
Tulane University  
*Stable Domains: Their classification, closure properties and applications.*

11:30 am

F. Lamarche  
University of Pennsylvania  
*Stable domains are generalized topological spaces.*

12:00 pm

C. Brink  
University of Cape Town  
*Powerdomains and verisimilitude.*

12:30 pm

Luncheon

CONFERENCE CONCLUDES