

21st Annual Conference on  
MATHEMATICAL FOUNDATIONS OF  
PROGRAMMING SEMANTICS

MFPS XXI

The University of Birmingham  
17–21 May 2005

**Conference Programme**

**Tuesday, 17 May**

**Security Tutorial Day**

**Venue: Room UG05, Learning Centre (map reference 14b)**

- 9:00 Gavin Lowe  
*Model checking of security protocols*
- 10:00 Joshua Guttman  
*Breaking and Proving Protocols using the Authentication Tests*
- 11:00 Coffee break (Computer Science building, Lobby)
- 11:30 Michael Backes  
*Linking Formal Methods and Cryptography — A Simulatable Dolev-Yao-Style Cryptographic Library*
- 14:00 Lunch
- 14:00 Michael Backes  
*On the Limitations of Simulatability Proofs — Impossibility Results Concerning the Soundness of Symbolic XOR and Hashes*
- 15:00 Gavin Lowe  
*Analysing application-layer protocols built on secure transport protocols*
- 16:00 Coffee break
- 16:30 Joshua Guttman  
*The Shapes of Skeletons*

## Workshop on the Krivine and ZINC abstract machines

Venue: Room UG06, Learning Centre (map reference 14b)

- 9:30 Malgorzata Biernacka  
*A concrete framework for environment machines*
- 10:00 Bernhard Reus  
*From Continuation Semantics to Abstract Machines*
- 10:30 Aaron Bohannon, Zena M. Ariola, and Amr Sabry  
*A Typed Calculus Supporting Shallow Embeddings of Abstract Machines*
- 11:00 Coffee break
- 11:30 Invited lecture: Jean-Louis Krivine  
*A lazy lambda-calculus machine for programs extracted with the axiom of choice*
- 12:30 Lunch at Staff House
- 14:00 Invited lecture: Xavier Leroy  
*From Krivine's machine to the Caml implementations*
- 15:00 Graham Hutton  
*Calculating an Exceptional Machine*
- 15:30 Paul Blain Levy  
*Jumping Semantics For Call-By-Push-Value*
- 16:00 Coffee break
- 16:30 Open-floor and discussion session

## Wednesday, 18 May, am

Venue: Lecture Theatre 203, Howarth Chemistry building (map reference 12)

- 9:00 Welcome — Prof Michael Sterling, Vice Chancellor and Principal**  
Invited Lecture: Gordon Plotkin  
*TBA*
- 10:00 Gavin Lowe and Joel Ouaknine  
*On timed models and full abstraction*
- 10:30 Coffee and registration
- 11:00 Soren Lassen  
*Normal form simulation for McCarthy's amb*
- 11:30 Paul Levy  
*Infinite Trace Equivalence*
- 12:00 Peter Buchlovsky and Hayo Thielecke  
*A Type-theoretic Reconstruction of the Visitor Pattern*
- 12:30 Lunch

## Wednesday, 18 May, pm

- 14:00 Special Session: The Essence of Programming —  
John Reynolds’s contribution to programming languages**
- Invited lecture: Cliff Jones  
*An approach to splitting atoms safely*
- 15:00 Olivier Danvy  
*Defunctionalized Interpreters for Higher-Order Programming Languages*
- 15:30 Coffee and registration
- 16:00 Richard Bornat  
*Variables as resource in separation logic*
- 16:30 Steve Brookes  
*A Grainless Semantics for Parallel Programs with Mutable Shared Data*
- 17:00 Andrzej Filinski  
*On the relations between monadic semantics*
- 17:30 Philip Wadler  
*The Girard-Reynolds Isomorphism (second edition)*
- 19:00 Reception at the Winterbourne Botanical Gardens (map reference 65)

## Thursday, 19 May, am

- 9:00 Invited Lecture: Catuscia Palamidessi  
*Probabilistic and nondeterministic aspects of anonymity*
- 10:00 Jeffrey M. Egger  
*A Quillen model structure for Chu spaces*
- 10:30 Coffee and registration
- 11:00 Reinhold Heckmann  
*Injective Convergence and Equilogical Spaces via Pretopological Spaces*
- 11:30 Jiří Adámek, Stefan Milius and Jiří Velebil  
*Elgot Algebras: A Base for Denotational Semantics*
- 12:00 Abbas Edalat and Dirk Pattinson  
*Domain Theoretic Solutions of Initial Value Problems for Unbounded Vector Fields*
- 12:30 Lunch

## Thursday, 19 May, pm

### 14:00 Special Session: Security

Invited lecture: Roberto Gorrieri

*TBA*

15:00 Michael Backes

*Real-or-random Key Secrecy of the Otway-Rees Protocol via a Symbolic Security Proof*

15:30 Coffee

16:00 Cathy Meadows

*An Encapsulated Authentication Logic for Reasoning About Key Distribution Protocols*

16:30 Bill Roscoe

*On the relationship between Web Services Security and traditional protocols*

17:00 Luca Vigano

*The AVISPA Tool for the Automated Validation of Internet Security Protocols and Applications*

17:30 Steve Zdancewic

*Deriving Noninterference Results from Parametricity*

## Friday, 20 May, am

### 9:00 Special Session: Quantum Computing

Invited Lecture: Samson Abramsky

*Information is physical but Physics is logical*

10:00 Bob Coecke

*Strongly compact closed quantum semantics*

10:30 Coffee

11:00 Vincent Danos

*TBA*

11:30 Prakash Panangaden

*The Computational Power of the W and GHZ states*

12:00 Isar Stubbe

*Towards “dynamic domains”: totally continuous cocomplete Q-categories*

12:30 Lunch

## Friday, 20 May, pm

- 14:00 Emmanuel Beffara  
*A Concurrent Model for Linear Logic*
- 14:30 Altaf Hussain and Michael Huth  
*Automata games for multiple-model checking*
- 15:00 Dale Miller and Alexis Saurin  
*A game semantics for proof search: preliminary results*
- 15:30 Coffee
- 16:00 Malgorzata Biernacka, Olivier Danvy, and Kristian Støvring  
*Program extraction from proofs of weak head normalization*
- 16:30 Ewen Denney, John Power and Konstantinos Tourlas  
*Hiproofs: A hierarchical notion of proof tree*
- 19:00 Conference dinner in Bank Restaurant**

## Saturday, 21 May

- 9:00 Special Session: Domain Theory and Topology**  
Invited Lecture: Andrej Bauer  
*First steps in synthetic computability theory*
- 10:00 Alex Simpson  
*An observational account of probabilistic nondeterminism*
- 10:30 Coffee
- 11:00 Klaus Keimel  
*Domains combining probability and non-determinism*
- 11:30 Jimmie Lawson  
*Extension of valuations on  $T_0$ -spaces*
- 12:00 Vincent Danos  
*TBA*
- 12:30 Lunch
- 14:00 Invited lecture: John Reynolds  
*Precise, intuitionistic, and supported assertions in separation logic*
- 15:00 Lars Birkedal, Rasmus Møgelberg and Rasmus Petersen  
*Parametric Domain-theoretic Models of Polymorphic Intuitionistic / Linear Lambda Calculus*
- 15:30 Rasmus Møgelberg, Lars Birkedal and Giuseppe Rosolini  
*Synthetic domain theory and models of Linear Abadi & Plotkin logic*

## Getting to the campus

We have arranged a shuttle bus to take you to the campus every morning of the conference. It is operated by *Nash's Coaches* and will leave at 8:30 from the hotel. If you miss the bus then your next best option is to take a taxi. Ask the driver to take you to the *East Gate* of the University on *Edgbaston Park Road*. From there walk straight ahead, through two underpasses and you will find the Howarth Chemistry building on your left.

If you insist, then it is also possible to walk: Cross Hagley Road and enter *Norfolk Road* at the traffic lights. After about 15 to 20 minutes you will reach *Harborne High Street*; go straight across into *Somerset Road*. Be careful to follow Somerset at the point where the main traffic makes a sharp turn to the right, and also at the roundabout further on. The second roundabout is at the intersection with *Pritchatts Road*. Turn right into Pritchatts and follow it all the way until you cross a bridge across the railway lines and the canal. A few metres later there is a narrow footpath on your right, along the running track; this is marked on your campus map in a lighter shade of grey. From there go to *Howarth Chemistry*, marked 12. Expect the whole journey to take about 50 to 60 minutes.

In the evenings, the shuttle bus leaves from the campus back to the hotel at the following times:

Wednesday: 10:30pm from Winterbourne Botanical Gardens  
Thursday: 6:15pm from the University Ring Road  
Friday: 5:15pm from the University Ring Road  
Saturday: 4:15pm from the University Ring Road

## On campus

Part of your conference pack is a *Visitors' map*. The largest drawing shows the *Edgbaston campus* of the university. This is where all MFPS activities take place.

Talks are in the *Small Haworth Lecture Theatre, 203* in the *Haworth Building* of the School of Chemistry, marked 12 on the Edgbaston campus map. For coffee breaks go to the lobby on the ground floor.

No special **lunch** arrangements have been made for participants. We recommend that you join us in *Staff House* (marked 28 on the map) in the *Noble Room* on the second floor. Meals have to be paid for in cash as you leave the serving area. We have reserved tables on the eastern side of the room. For a coffee after lunch you can go down to the general common room on the first floor, or visit any of the other coffee outlets on campus.

## Guide to the Computer Science building

See conference pack.

## Guide to computing facilities

See conference pack.

### Dinners

On **Wednesday** evening Uday Reddy, Head of the School of Computer Science, is hosting a reception in John Reynolds's honour at the *Winterbourne Botanical Gardens* on Edgbaston Park Road, marked 65 on the map.

On **Thursday** evening you are on your own. Here are some suggestions where to find food:

There are a number of very reasonably priced restaurants and eateries on the *Bristol Road*, south of the campus (leave through the *Grange Road Gate*).

Also on Bristol Road, you can catch a bus into town. Bus stops are marked on the map. Alternatively, you can take the train from the *University* train station, just beyond the *West Gate*. In the city you should walk towards *Broad Street* and *Brindley Place*. You will find numerous restaurants in that area. Catch a bus back to the Apollo on Broad Street (eg, number 120 or 126). You will recognise the correct bus stop by looking out for *T.G.I. Fridays* on the left or the Apollo Hotel on the right.

Another way to get to the City Centre is to walk along the canal, for which there is an access point between the *West Gate* and the train station. Expect this to take at least 40 minutes but you will be rewarded with a pleasant range of restaurants at the back of *The Mailbox* (which is just where the canal makes a 90 degree swing to the left towards Broad Street and Brindley Place).

You could also walk back towards the hotel and eat halfway in a restaurant on Harborne High Street.

Finally, you can take the shuttle bus back to the hotel and start from there by taking a bus on Hagley Road.

The conference dinner is scheduled for 7pm on **Friday** evening, at *Bank Restaurant* on Brindley Place. Use any of the methods described above to get into town and ask for directions there. Brindley Place is next to the *International Convention Centre* which is on Broad Street. Again, you may wish to take the shuttle bus back to the hotel first.

### Finally...

If you have any other queries or special requirements then please approach a member of the organising team:

Sammy Snow  
Achim Jung  
Martín Escardó  
Steve Vickers