



MFPSXXXIII

33rd Conference on the
Mathematical Foundations of
Programming Semantics

CALCO2017

7th Conference on
Algebra and Coalgebra in
Computer Science

12–16 June 2017

Faculty of Mathematics and Physics
University of Ljubljana

About the conferences

Mathematical Foundations of Programming Semantics XXXIII

The conference is dedicated to the areas of mathematics, logic, and computer science that are related to models of computation in general, and to semantics of programming languages in particular.

7th Conference on Algebra and Coalgebra in Computer Science

The conference aims to bring together researchers and practitioners with interests in foundational aspects, and both traditional and emerging uses of algebra and coalgebra in computer science.

Practical information

How do I connect to the internet?

The `eduroam` network is available throughout the building. Alternatively, you may use the local Wi-Fi network `MFPSCALCO`, which is available in rooms 2.01 and 2.05. The password is `whycombinator`.

Where do I get even more coffee?

In our $\text{Ma}\varphi\text{ja}$ science café on the ground level of the mathematics building.

Where do I get even more water?

Tap water in Ljubljana is of good quality, probably better than bottled water.

Where do I discuss even more science?

The lecture rooms 2.03 and 2.04 are available for discussion.

Where do I get even more help?

- Emergency: 112
- Andrej Bauer: +386 31 727 708
- Matija Pretnar: +386 31 893 497

Local transportation

The conference will take place at the Faculty of Mathematics and Physics, Jadranska 21, second floor. Please consult the map at goo.gl/s0Th0X for further information.

Walking

Most places in Ljubljana can be reached on foot. It takes about 30 minutes to walk from the far end of the city centre to the Faculty. We recommend that you avoid the busy Tržaška cesta and walk down the parallel Jamova cesta, past the ancient Roman wall of Emona.

City bus

To use the buses you need the Urbana paycard, which you can buy and recharge at any newsstand and in many stores. The card costs €2 and one ride €1.20. The entrance to the bus is only at the front. Bus route 1 in the direction of “Mestni log” will take you directly to the venue, which is at the “Jadranska” stop. Alternatively, you can take route 6 in the direction of “Dolgi most” and get off at the “Hajdrihova” stop. Please consult Google maps for further information about bus routes and schedules.

City bicycles

There is a popular city bike service with many bike stations throughout the city. The station closest to the venue is at Tržaška cesta 37. In order to use the bikes, you must pre-register at en.bicikelj.si, and buy an Urbana card (see above). The registration fee for one week is just €1, and renting a bike is free for the first hour, which suffices for most rides.

Taxi

Compared to many other cities, taxi service in Ljubljana is relatively cheap. A ride across town will cost anywhere between €4 and €10. Ordering a taxi by phone is somewhat cheaper than picking one up in the street. We have had good experience with Taxi Rondo, reachable at +386 40970970.

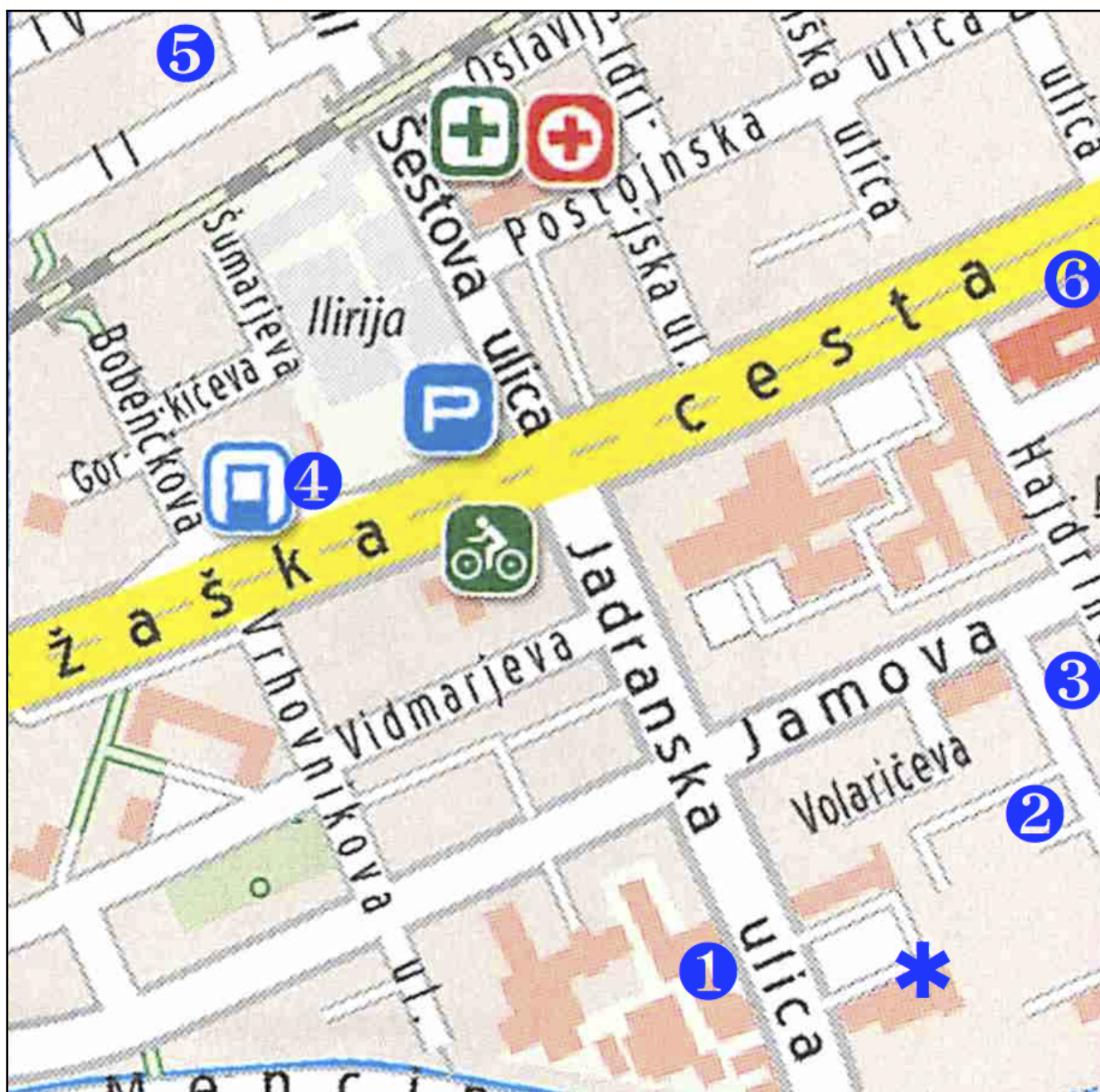
Transport from and to the airport

The taxis waiting at the airport are expensive. We strongly recommend that you pre-order a taxi or a shuttle ahead of time and have them wait for you. We have had good experience with Taxi Rondo, reachable 24 hours a day in English at +386 40970970 or at en.taxi-rondo.si. The taxi should cost around €25 and a shuttle around €10.

Lunch

In the vicinity of the venue there are several places where you can have lunch. They are listed by proximity to the venue (marked * on the map):

- * "Maφja science café" at the venue (0 m)
- ❶ "IJS cafeteria" across the street (50 m)
- ❷ "Lonček kuhaj" cafeteria serving home-style food (100 m)
- ❸ "Restaurant Grm" at Hajdrihova 16, Slovenian restaurant (150 m)
- ❹ "Za pumpo" at Tržaška 46, restaurant and pizzeria (500 m)
- ❺ "Rožna hiša" at Rožna dolina c. II/3, Slovenian restaurant (800 m)
- ❻ "Mirje" at Tržaška 5, Italian bistro (1.1 km)



Online map at goo.gl/s0Th0X

Social events

MFPS Welcome reception – Monday June 12 at ~~18:30~~ 17:30

There will be a welcome reception for all MFPS participants after the last talk on Monday. The reception will take place at the venue, outside the Ma φ ja science café on the ground floor.

Guided tour of Ljubljana – Wednesday June 14 at 18:00

After the last talk on Wednesday we will walk to Trg francoske revolucije with a tourist guide. At 18:00 there we will pick up any remaining participants at the obelisk and continue the tour of the city. The tour will end at the Ljubljana castle where the conference dinner will be served.

Conference dinner – Wednesday June 14 at 20:00

The conference dinner will take place at Gostilna na Gradu, which is in the Ljubljana castle. If you join the guided city tour you will end up there. If you plan to arrive by yourself, you may either walk up to the castle, or take the funicular at Krekov trg 4. Use the magic word “MFPSALCO” to get a free return pass! Please note that the funicular stops operating at 23:00.

MFPS – Monday, June 12th

8:30–9:00 REGISTRATION & OPENING
in front of room 2.05

Tutorial on Advances in Concurrent Program Verification (room 2.05)

9:00–10:00 Derek Dreyer
Iris: A Modular Foundation for Higher-Order Concurrent Separation Logic

COFFEE BREAK (30 minutes)

Special session on Advances in Concurrent Program Verification (room 2.05)

10:30–11:05 Robbert Krebbers
Interactive Proofs in Higher-Order Concurrent Separation Logic

11:10–11:45 Jacques-Henri Jourdan
RustBelt: Securing the Foundations of the Rust Programming Language

11:50–12:25 Mike Dodds
Starling: Lightweight Concurrency Verification with Views

LUNCH BREAK (1 hour 30 minutes)

Invited talk (room 2.05)

14:00–15:00 Laura Kovacs
Algebraic Reasoning for Program Analysis

COFFEE BREAK (30 minutes)

Afternoon session (room 2.05)

15:30–15:50 Simon Docherty and David Pym
A Stone-type duality theorem for Separation Logic via its underlying bunched logics

15:55–16:15 Aleš Bizjak and Lars Birkedal
On Models of Higher-Order Separation Logic

16:20–16:40 Paul-André Melliès and Léo Stefanescu
A Game Semantics of Concurrent Separation Logic

16:45–17:05 Ryan Kavanagh and Stephen Brookes
A Denotational Semantics for SPARC TSO

SHORT BREAK (20 minutes)

17:30–19:00 WELCOME RECEPTION
outside the Μαφja science café at ground floor of the venue

REPAS meeting – Tuesday, June 13th

Morning session I (room 2.01)

9:00–9:20 Catuscia Palamidessi

Opening of the meeting

9:20–10:00 Francesco Gavazzo

An Abstract Account to Applicative Bisimulation Metrics

COFFEE BREAK (30 minutes)

Morning session II (room 2.01)

10:30–11:05 Prakash Panangaden

Bicategories of Markov Processes

11:10–11:45 Barbara König

Behavioural Metrics via Functor Lifting – A Coalgebraic Approach

11:50–12:45 Daniela Petrisan

Is the Kantorovitch lifting canonical?

LUNCH BREAK (1 hour 30 minutes)

Afternoon session I (room 2.01)

14:20–15:00 Raphaëlle Crubillé

Toward Higher-order Cryptography

COFFEE BREAK (30 minutes)

Afternoon session II (room 2.01)

15:30–16:05 Bart Jacobs

Disintegration

16:10–16:45 Giorgio Bacci

On the Metric-based Approximate Minimization of Markov Chains

16:50–18:30 BUSINESS MEETING

in room 2.01

MFPS – Tuesday, June 13th

Tutorial on Foundations of Network Programming (room 2.05)

9:00–10:00 Nate Foster
Foundations of Network Programming

COFFEE BREAK (30 minutes)

Special session on Foundations of Network Programming (room 2.05)

10:30–11:05 Martin Vechev
Programmable Networks with Synthesis

11:10–11:45 Loris D'Antoni
Synthesis for intent-based networking

11:50–12:25 Zack Tatlock
*Taking the Bull by the Horns:
Towards Full Formal Verification for BGP, Raft, and Chord*

LUNCH BREAK (1 hour 30 minutes)

Tutorial on Algebraic Automata Theory (room 2.05)

14:00–15:00 Laure Daviaud
*An introduction to the algebraic theory of rational languages
(and a little bit of topology)*

COFFEE BREAK (30 minutes)

Special session on Algebraic Automata Theory (room 2.05)

15:30–16:05 Stefan Milius
Eilenberg Theorems for Free

16:10–16:45 Jean-Eric Pin
Beyond Eilenberg's Variety Theorem

16:50–17:25 Mai Gehrke
Stone duality for languages and complexity

SHORT BREAK (15 minutes)

Afternoon session (room 2.05)

17:45–18:05 Loris D'Antoni, Zachary Kincaid and Fang Wang
A Symbolic Decision Procedure for Symbolic Alternating Finite Automata

18:10–18:30 Robert Glück and Robin Kaarsgaard
A categorical foundation for structured reversible flowchart languages

CALCO – Wednesday, June 14th

8:30–9:00 REGISTRATION & OPENING
in front of room 2.05

Joint tutorial on Metrics (room 2.05, chair: Andrej Bauer)

9:00–10:00 James Worrell
The expressiveness of metric temporal logic

COFFEE BREAK (30 minutes)

Joint special session on Metrics (room 2.05, chair: Prakash Panangaden)

10:30–11:05 Vincent Danos
Consensus

11:10–11:45 Catuscia Palamidessi
Verification of Differential Privacy in Concurrent Systems

11:50–12:25 Marco Gaboardi
A semantic account of metric preservation in presence of probabilities

LUNCH BREAK (1 hour 30 minutes)

Semantics I (room 2.01, chair: Jamie Vicary)

14:00–14:25 Tomáš Jakl and Achim Jung
Free constructions and coproducts of d -frames

14:30–14:55 W. John Gowers and James Laird
*Sequoidal Categories and Transfinite Games:
A Coalgebraic Approach to Stateful Objects in Game Semantics*

15:00–15:25 Clovis Eberhart and Tom Hirschowitz
*Justified Sequences in String Diagrams:
A Comparison Between Two Approaches to Concurrent Game Semantics*

COFFEE BREAK (30 minutes)

Quantitative systems (room 2.01, chair: Jurriaan Rot)

16:00–16:25 Ana Sokolova and Harald Woracek
Termination in Convex Sets of Distributions

16:30–16:55 Corina Cirstea, Shunsuke Shimizu and Ichiro Hasuo
Parity Automata for Quantitative Linear Time Logics

17:00–17:10 Simone Barlocco and Clemens Kupke
Early Ideas: Automata Learning via Logic

17:15–17:25 Joshua Holland
Early Ideas: Coalgebraic operations on bi-infinite streams

17:30–23:00 CITY TOUR & CONFERENCE DINNER
see the “Social events” section

MFPS – Wednesday, June 14th

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The expressiveness of metric temporal logic

COFFEE BREAK (30 minutes)

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A semantic account of metric preservation in presence of probabilities

LUNCH BREAK (1 hour 30 minutes)

Invited talk (room 2.05)

14:00–15:00 Dexter Kozen
Borel Coalgebra and Non-Wellfounded Logic

Afternoon session I (room 2.05)

15:00–15:25 Giorgio Bacci, Giovanni Bacci, Kim Guldstrand Larsen and Radu Mardare
Complete Axiomatization for the Total Variation Distance of Markov Chains

COFFEE BREAK (30 minutes)

Afternoon session II (room 2.05)

15:55–16:15 Bart Jacobs
A Note on Distances between Probabilistic and Quantum distributions

16:20–16:40 Nicolas Gagne and Prakash Panangaden
A categorical characterization of relative entropy on Polish spaces

16:45–17:05 Alex Simpson
Category-theoretic Structure for Independence and Conditional Independence

17:10–17:30 Mathys Rennela and Sam Staton
Classical control and quantum circuits in enriched category theory

17:30–23:00 CITY TOUR & CONFERENCE DINNER
see the “Social events” section

CALCO – Thursday, June 15th

Coalgebraic Logics I (room 2.01, chair: Corina Cirstea)

9:00–9:25 Fatemeh Seyfan, Lutz Schröder and Dirk Pattinson
Uniform Interpolation in Coalgebraic Modal Logic

9:30–9:55 Fredrik Dahlqvist and Alexander Kurz
Positive coalgebraic logic

COFFEE BREAK (30 minutes)

Semantics II (room 2.01, chair: Tom Hirschowitz)

10:30–10:55 Harald König and Uwe Wolter
Being Van Kampen is a Uniqueness Property in Presheaf Topoi

11:00–11:25 Jiri Adamek and Stefan Milius
On Corecursive Algebras for Functors Preserving Coproducts

11:30–11:55 Stefan Milius
Proper Functors and their Rational Fixed Point

12:00–12:25 Harsh Beohar and Sebastian Küpper
On path-based coalgebras and weak notions of bisimulation

LUNCH BREAK (1 hour 30 minutes)

Invited talk (room 2.01, chair: Barbara König)

14:00–15:00 Alex Simpson
Probability sheaves and the Giry monad

String Diagrams and Quantum (room 2.01, chair: Fabio Zanasi)

15:00–15:25 David Reutter and Jamie Vicary
A 2-categorical approach to composing quantum structures

15:30–15:55 David Reutter and Jamie Vicary
A classical groupoid model for quantum networks

COFFEE BREAK (30 minutes)

State Machines (and No Coalgebra) (room 2.01, chair: Henning Urbat)

16:30–16:55 Thomas Colcombet and Daniela Petrisan
Automata minimization – a functorial approach

17:00–17:25 Alexander Knapp and Till Mossakowski
UML interactions meet state machines – an institutional approach

17:30–17:45 Bart Jacobs, Kenta Cho
CALCO Tools: The EffProb Library for Probabilistic Calculations

SHORT BREAK (10 minutes)

18:00–19:30 BUSINESS MEETING
in room 2.01

MFPS – Thursday, June 15th

Invited talk (room 2.05)

- 9:00–10:00 Amr Sabry
From Reversible Programs to Univalent Universes and Back
with Jacques Carette, Chao-Hong Chen, Vikraman Choudhury, Robert Rose

COFFEE BREAK (30 minutes)

Morning session (room 2.05)

- 10:30–10:50 Barry Jay
Self-Quotation in a Typed, Intensional Lambda-Calculus
- 10:55–11:15 Peter Dybjer and Hugo Moeneclaey
Finitary Higher Inductive Types in the Groupoid Model
- 11:20–11:40 Dariusz Biernacki, Sergueï Lenglet and Piotr Polesiuk
Proving Soundness of Extensional Normal-Form Bisimilarities
- 11:45–12:05 Niels F.W. Voorneveld
Non-deterministic effects in a realizability model
- 12:10–12:30 Clément Jacq and Paul-André Melliès
On dialogue games and graph games

CALCO – Friday, June 16th

Invited talk (room 2.01, chair: Filippo Bonchi)

9:00–10:00 Nicoletta Sabadini
CospanSpan (Graph) – an algebra for open, reconfigurable nets

COFFEE BREAK (30 minutes)

String Diagrams And Distributive Laws (room 2.01, chair: Stefan Milius)

10:30–10:55 Brendan Fong and Fabio Zanasi
A Universal Construction for (Co)relations

11:00–11:25 Dan Marsden and Fabrizio Genovese
Custom Hypergraph Categories via Generalized Relations

11:30–11:55 Henning Basold, Damien Pous and Jurriaan Rot
Monoidal Company for Accessible Functors

12:00–12:10 Joost Winter
Early Ideas: A completeness result for finite bisimulations up-to congruence

12:15–12:25 Florence Clerc, Prakash Panangaden and William Boshuck
Early Ideas: Towards a categorical understanding of variety theorems for quantitative algebras

LUNCH BREAK (1 hour 30 minutes)

Coalgebraic Logics II (room 2.01, chair: Alexander Kurz)

14:00–14:25 David Sprunger and Lawrence Moss
Substitutive relations and completeness for finitary set functors

14:30–14:55 Sebastian Enqvist and Yde Venema
Disjunctive bases – normal forms for modal logics

15:00–15:25 Zeinab Bakhtiari and Helle Hvid Hansen
Bisimulation for weakly expressive coalgebraic modal logics

15:30–15:40 Jason Castiglione
Early Ideas: Lazy Players Matching Pennies

15:45–15:55 Thorsten Wißmann
Early Ideas: A Coalgebraic Paige-Tarjan Algorithm

COFFEE BREAK (30 minutes)

Rational Behaviours (room 2.01, chair: Henning Basold)

16:30–16:55 Henning Urbat
Finite Behaviours and Finitary Corecursion

17:00–17:10 Barbara König and Christina Mika
Bisimulation Games on Coalgebras

17:15–17:25 Martin Glauer and Till Mossakowski
Early Ideas: Institutions for database schemas and datasets

17:30–17:40 Takeo Uramoto
Early Ideas: Finite automata and non-commutative analogue of lambda rings

17:45–17:55 Alessandra Di Pierro
Early Ideas: A Categorical Semantics for the Probabilistic lambda-calculus

18:00–18:10 Liang-Ting Chen
Early Ideas: Trace semantics via lax comonad

