

# PROGRAMME



## **CiE 2009** **Mathematical Theory and** **Computational Practice**

**5th Conference on Computability in Europe**  
**Heidelberg, Germany, July 19-24, 2009**

**Sunday, 19 July 2009**

**16:30 – REGISTRATION Foyer P**

**18:00 – 18:15 OPENING Lecture Hall P1**

**18:15 – 19:15 OPENING LECTURE (Chair: Benedikt Löwe) Lecture Hall P1**

**Mike Edmunds** (Cardiff University)  
*The Antikythera Mechanism*

**19:15 – 21:00 WELCOME RECEPTION Foyer P**

## Monday, 20 July 2009

## Overview

<b>09:00 – 10:30</b>	<b>TUTORIAL L.1</b> (Chair: Wolfgang Merkle)	<b>Lecture Hall P1</b>
	<b>Luca Trevisan</b> (University of California, Berkeley) <i>Advanced Methods in Randomization (Part 1)</i>	
<b>10:30 – 11:00</b>	<b>COFFEE</b>	<b>Foyer P</b>
<b>11:00 – 12:40</b>	<b>CONTRIBUTED TALKS</b> (Sessions 1A – 1E)	
	<i>For the programme, see pages 5-6.</i>	
<b>12:40 – 14:30</b>	<b>LUNCH</b>	
<b>14:30 – 16:00</b>	<b>SPECIAL SESSIONS</b> (Sessions 1.1 – 3.1)	
	<i>For the programme, see page 4.</i>	
<b>16:00 – 16:30</b>	<b>COFFEE</b>	<b>Foyer P</b>
<b>16:30 – 17:30</b>	<b>PLENARY LECTURE</b> (Chair: Martin Otto)	<b>Lecture Hall P1</b>
	<b>Phokion G. Kolaitis</b> (IBM Almaden Research Center, San Jose) <i>Foundations and Applications of Schema Mappings</i>	

## Monday, 20 July 2009

## Special Sessions

<b>1.1</b>	<b>Algorithmic Randomness (Part 1)</b> Chair: Wolfgang Merkle	<b>Lecture Hall M1</b>
14:30 – 15:15	<b>Laurent Bienvenu</b> <i>On Computably Enumerable Random Reals</i>	
15:15 – 16:00	<b>Bjørn Kjos-Hanssen</b> <i>Members of Random Closed Sets</i>	
<b>2.1</b>	<b>Computational Model Theory (Part 1)</b> Chair: Andrei Morozov	<b>Lecture Hall M2</b>
14:30 – 15:15	<b>Russell Miller</b> <i>Spectra of Algebraic Fields and Subfields</i>	
15:15 – 16:00	<b>Antonio Montalbán</b> <i>Notes on the Jump of a Structure</i>	
<b>3.1</b>	<b>Computation in Biological Systems (Part 1)</b> Chair: Erzsébet Csuhaj-Varjú	<b>Lecture Hall P2</b>
14:30 – 15:15	<b>Ion Petre</b> <i>Computational Strategies for the Heat Shock Response</i>	
15:15 – 16:00	<b>Francisco J. Romero-Campero</b> <i>An Approach to the Engineering of Cellular Models Based on P Systems</i>	

Monday, 20 July 2009

## Contributed Talks

SESSION 1A	Chair: Sergey Goncharov	Lecture Hall M1
11:00 – 11:20	<b>Douglas Cenzer, Valentina Harizanov, and Jeffrey B. Remmel</b> <i><math>\Sigma_1^0</math> and <math>\Pi_1^0</math> Equivalence Structures</i>	
11:20 – 11:40	<b>Kyung Il Lee</b> <i>Computably Well-Founded <math>\omega</math>-c.e. Linear Extensions</i>	
11:40 – 12:00	<b>Pavel Semukhin</b> <i>Prime Models of Finite Computable Dimension</i>	
12:00 – 12:20	<b>Pavel Alaev</b> <i>Computably Categorical Boolean Algebras Enriched by Ideals and Atoms</i>	
12:20 – 12:40	<b>Alexander G. Melnikov</b> <i><math>0^n</math>-Categorical Completely Decomposable Torsion-Free Abelian Groups</i>	

SESSION 1B	Chair: Bjørn Kjos-Hanssen	Lecture Hall M2
11:00 – 11:20	<b>Mathieu Hoyrup and Cristóbal Rojas</b> <i>An Application of Martin-Löf Randomness to Effective Probability Theory</i>	
11:20 – 11:40	<b>Willem L. Fouché</b> <i>Fractals Generated by Algorithmically Random Brownian Motion</i>	
11:40 – 12:00	<b>Cameron E. Freer and Daniel M. Roy</b> <i>Computable Exchangeable Sequences Have Computable de Finetti Measures</i>	
12:00 – 12:20	<b>Nathanael L. Ackerman, Cameron E. Freer, and Daniel M. Roy</b> <i>The Complexity of Computable Conditional Probability</i>	
12:20 – 12:40	<b>Jiang Xin, Shaoting Tang, Lili Ma, Zhanli Zhang, and Zhiming Zheng</b> <i>Random Diffusion and Congestion on Weighted Complex Networks</i>	

SESSION 1C	Chair: Lars Kristiansen	Lecture Hall M3
11:00 – 11:20	<b>John Case and Samuel E. Moelius III</b> <i>Program Self-Reference in Constructive Scott Subdomains</i>	
11:20 – 11:40	<b>Sara Quinn</b> <i>Index Sets and Scott Sentences</i>	
11:40 – 12:00	<b>Chung-Chih Li</b> <i>Union Theorems in Type-2 Computation</i>	
12:00 – 12:20	<b>Norihiro Kamide</b> <i>Strong Normalization of Program-Indexed Lambda Calculus</i>	
12:20 – 12:40	<b>Dag Normann</b> <i>Sequential Functionals at Type Level 2</i>	

SESSION 1D	Chair: Lev Gordeev	Lecture Hall M4
11:00 – 11:20	<b>Karel Chvalovsky</b> <i>Independence of Axioms in Non-Classical Logics and ATP</i>	
11:20 – 11:40	<b>Guido Fiorino</b> <i>Taming Implications in Dummett Logic</i>	
11:40 – 12:00	<b>Sergey Babenyshev, Vladimir Rybakov, and Renate Schmidt</b> <i>Temporal Logic Treating Uncertainty and Interacting Agents with Time Indexes from <math>\mathbb{Z}</math></i>	
12:00 – 12:20	<b>Pieter Collins and Ivan S. Zapreev</b> <i>Computable CTL for Discrete-Time and Continuous-Space Dynamic Systems</i>	
12:20 – 12:40	<b>Yanfang Ma and Yixiang Chen</b> <i>Two-thirds Bisimulation Indexes</i>	

SESSION 1E	Chair: Alessandra Carbone	Lecture Hall M5
11:00 – 11:20	<b>Ömer Egecioglu and Oscar H. Ibarra</b> <i>On Stateless Multicounter Machines</i>	
11:20 – 11:40	<b>Benedek Nagy</b> <i>On a Hierarchy of <math>5' \rightarrow 3'</math> Sensing WK Finite Automata Languages</i>	
11:40 – 12:00	<b>Thomas Zerjatke</b> <i>Solving a PSPACE-Complete Problem with DNA Computing</i>	
12:00 – 12:20	<b>T. Hinze, R. Fabler, G. Escuela, B. Ibrahim, and S. Schuster</b> <i>Computation by Synthetic Cell Signaling and Oscillating Processes Modelled Using Mass-Action Kinetics</i>	
12:20 – 12:40	<b>Ian Pratt-Hartmann and Ivo Düntsch</b> <i>Functions Definable by Arithmetic Circuits</i>	

## Tuesday, 21 July 2009

## Overview

<b>09:00 – 10:30</b>	<b>TUTORIAL I.2</b> (Chair: Wolfgang Merkle)	<b>Lecture Hall P1</b>
	<b>Luca Trevisan</b> (University of California, Berkeley) <i>Advanced Methods in Randomization (Part 2)</i>	
<b>10:30 – 11:00</b>	<b>COFFEE</b>	<b>Foyer P</b>
<b>11:00 – 12:40</b>	<b>CONTRIBUTED TALKS (Sessions 2A – 2E)</b>	
	<i>For the programme, see pages 9-10.</i>	
<b>12:40 – 14:30</b>	<b>LUNCH</b>	
<b>14:30 – 16:00</b>	<b>SPECIAL SESSIONS (Sessions 1.2 – 3.2)</b>	
	<i>For the programme, see page 8.</i>	
<b>16:00 – 16:30</b>	<b>COFFEE</b>	<b>Foyer P</b>
<b>16:30 – 17:30</b>	<b>PLENARY LECTURE</b> (Chair: Vasco Brattka)	<b>Lecture Hall P1</b>
	<b>Jeremy Avigad</b> (Carnegie Mellon University, Pittsburgh) <i>Computability in Ergodic Theory</i>	
<b>17:35 – 18:20</b>	<b>WOMEN IN COMPUTABILITY WORKSHOP</b> <b>Lecture Hall P2</b> Coordinators: Paola Bonizzoni and Elvira Mayordomo	

## Tuesday, 21 July 2009

## Special Sessions

<b>1.2</b>	<b>Algorithmic Randomness (Part 2)</b> Chair: Elvira Mayordomo	<b>Lecture Hall M1</b>
14:30 – 15:15	<b>Jack H. Lutz</b> <i>A Divergence Formula for Randomness and Dimension</i>	
15:15 – 16:00	<b>Nikolay Vereshchagin</b> <i>Algorithmic Minimal Sufficient Statistic Revisited</i>	
<b>2.2</b>	<b>Computational Model Theory (Part 2)</b> Chair: Julia F. Knight	<b>Lecture Hall M2</b>
14:30 – 15:15	<b>Ekaterina B. Fokina</b> <i>Equivalence Relations on Classes of Computable Structures</i>	
15:15 – 16:00	<b>Sergey Goncharov</b> <i>Computable Numberings of Hyperarithmetical Sets and Complexity of Countable Models</i>	
<b>3.2</b>	<b>Computation in Biological Systems (Part 2)</b> Chair: Alessandra Carbone	<b>Lecture Hall P2</b>
14:30 – 15:15	<b>David R. Westhead</b> <i>Bayesian Data Integration for Predicting Gene Function in Malaria</i>	
15:15 – 16:00	<b>Alberto Policriti</b> <i>Stochastic Programs and Hybrid Automata for (Biological) Modeling</i>	

Tuesday, 21 July 2009

Contributed Talks

SESSION 2A	Chair: Douglas Cenzler	Lecture Hall M1
11:00 – 11:20	<b>Chris Conidis</b> <i>The Reverse Mathematics of Artinian Rings</i>	
11:20 – 11:40	<b>Kentaro Sato</b> <i>An Impact of Infinity: Comparison of Two Reverse Mathematics</i>	
11:40 – 12:00	<b>Paul Brodhead and Bjørn Kjos-Hanssen</b> <i>The Strength of the Grätzer-Schmidt Theorem</i>	
12:00 – 12:20	<b>Peter M. Gerdes</b> <i>n-Tardy Sets</i>	
12:20 – 12:40	<b>Grzegorz Herman and Michael Soltys</b> <i>Unambiguous Functions in Logarithmic Space</i>	

SESSION 2B	Chair: Andrei Morozov	Lecture Hall M2
11:00 – 11:20	<b>Oleg V. Kudinov, Victor L. Selivanov, and Anton V. Zhukov</b> <i>Definability of Closure Operations in the h-Quasiorder of Labeled Forests</i>	
11:20 – 11:40	<b>Oleg V. Kudinov and Victor L. Selivanov</b> <i>A Gandy Theorem for Abstract Structures and Applications to First-Order Definability</i>	
11:40 – 12:00	<b>Andreas Weiermann</b> <i>A Computation of the Maximal Order Type of the Term Ordering on Finite Multisets</i>	
12:00 – 12:20	<b>Alexandra A. Soskova and Ivan N. Soskov</b> <i>Some Applications of the Jump Inversion Theorem for the Degree Spectra</i>	
12:20 – 12:40	<b>Alexey Stukachev</b> <i>On Semilattices of <math>\Sigma</math>-Degrees of Structures</i>	

SESSION 2C	Chair: Olivier Bournez	Lecture Hall M3
11:00 – 11:20	<b>J. Raymundo Marcial-Romero, Claudia Zepeda, J. A. Hernández, Héctor A. Montes-Venegas, and Davin Linares</b> <i>An Implementation of Exact Real Number Computation Based on LRT</i>	
11:20 – 11:40	<b>Thomas Anberrée</b> <i>First-Order Universality for Real Programs</i>	
11:40 – 12:00	<b>Pieter Collins</b> <i>Computable Types for Dynamic Systems</i>	
12:00 – 12:20	<b>Martín Escardó</b> <i>Computability of Continuous Solutions of Higher-Type Equations</i>	
12:20 – 12:40	<b>Vasco Brattka and Guido Gherardi</b> <i>Weihrauch Degrees, Omniscience Principles and Weak Computability</i>	

SESSION 2D	Chair: Peter Fejer	Lecture Hall M4
11:00 – 11:20	<b>David R. Bélanger</b> <i>Structures of Some Strong Reducibilities</i>	
11:20 – 11:40	<b>Philipp Bodewig</b> <i>Initial Segments of C.E. <math>ibT</math>-Degrees</i>	
11:40 – 12:00	<b>Jan Reimann</b> <i>Algorithmic Reducibilities and Borel Equivalence Relations</i>	
12:00 – 12:20	<b>Sanjay Jain, Frank Stephan, and Jason Teutsch</b> <i>Index Sets and Universal Numberings</i>	
12:20 – 12:40	<b>Grégory Lafitte and Michael Weiss</b> <i>Constructing New Aperiodic Self-Simulating Tile Sets</i>	

SESSION 2E	Chair: Erzsébet Csuhaj-Varjú	Lecture Hall M5
11:00 – 11:20	<b>James Lambert</b> <i>The Relationship Between Measurability and Computability</i>	
11:20 – 11:40	<b>Hendrik Blockeel and Robert Brijder</b> <i>Learning Non-Confluent NLC Graph Grammar Rules</i>	
11:40 – 12:00	<b>Ekaterina Komendantskaya</b> <i>Parallel Term Rewriting in Neural Networks</i>	
12:00 – 12:20	<b>Guénola Drillon</b> <i>Combinatorics, Chromosomal Rearrangements and Reconstruction of Ancestral Genomes</i>	
12:20 – 12:40	<b>Ulavappa B. Angadi and M.Venkatesulu</b> <i>Automatic Classification of Protein Sequences into Families Using Elongated K-Mean Spectral Clustering</i>	

## Wednesday, 22 July 2009

## Overview

09:00 – 11:00	<b>PLENARY LECTURES</b> (Chair: Peter van Emde Boas)	<b>Lecture Hall P1</b>
09:00 – 10:00	<b>Manindra Agrawal</b> (Indian Institute of Technology, Kanpur) <i>The Isomorphism Conjecture</i>	
10:00 – 11:00	<b>Rafael Sorkin</b> (Perimeter Institute for Theoretical Physics, Waterloo) <i>Logic : the Quantum :: Geometry : Gravity</i>	
11:00 – 11:30	<b>COFFEE</b>	<b>Foyer P</b>
11:30 – 12:50	<b>CONTRIBUTED TALKS</b> (Sessions 3A – 3E)	
	<i>For the programme, see pages 13-14.</i>	
12:50 – 14:30	<b>LUNCH</b>	
14:30 – 16:00	<b>SPECIAL SESSIONS</b> (Sessions 4.1 – 6.1)	
	<i>For the programme, see page 12.</i>	
16:00 – 16:30	<b>COFFEE</b>	<b>Foyer P</b>
16:30 – 17:30	<b>PLENARY LECTURE</b> (Chair: Richard Shore)	<b>Lecture Hall P1</b>
	<b>Andrea Sorbi</b> (University of Siena) <i>Computing Using Positive Information</i>	
17:35 – 18:30	<b>COMPUTABILITY IN EUROPE ANNUAL GENERAL MEETING</b>	<b>Lecture Hall P1</b>
19:30 -	<b>CONFERENCE DINNER</b>	

## Wednesday, 22 July 2009

## Special Sessions

<b>4.1</b>	<b>Optimization and Approximation (Part 1)</b> Chair: Magnús M. Halldórsson	<b>Lecture Hall P2</b>
14:30 – 15:15	<b>Harald Räcke</b> <i>Survey on Oblivious Routing Strategies</i>	
15:15 – 16:00	<b>Jean Cardinal</b> <i>Minimum Entropy Combinatorial Optimization Problems</i>	
<b>5.1</b>	<b>Philosophical and Mathematical Aspects of Hypercomputation (Part 1)</b> Chair: Philip Welch	<b>Lecture Hall M2</b>
14:30 – 15:15	<b>Samuel Coskey</b> <i>Infinite-Time Turing Machines and Borel Reducibility</i>	
15:15 – 16:00	<b>Oron Shagrir</b> <i>On the Relations Between Effective, Hyper-, and Physical Computation</i>	
<b>6.1</b>	<b>Relative Computability (Part 1)</b> Chair: Rod Downey	<b>Lecture Hall M1</b>
14:30 – 15:15	<b>Richard A. Shore</b> <i>Domination, Forcing, Array Nonrecursiveness and Relative Recursive Enumerability</i>	
15:15 – 16:00	<b>George Barmpalias</b> <i>Tracing and Domination in the Turing Degrees</i>	

Wednesday, 22 July 2009

## Contributed Talks

SESSION 3A	Chair: Armin Hemmerling	Lecture Hall M1
11:30 – 11:50	<b>Klaus Meer</b> <i>On Ladner's Result for a Class of Real Machines with Restricted Use of Constants</i>	
11:50 – 12:10	<b>Tobias Gärtner and Günter Hotz</b> <i>Computability of Analytic Functions with Analytic Machines</i>	
12:10 – 12:30	<b>Christine Gaßner</b> <i>Hierarchies below the Halting Problem for Additive Machines</i>	
12:30 – 12:50	<b>Arno Pauly</b> <i>Real Hypercomputation with Infinite Oracle Queries</i>	

SESSION 3B	Chair: Frank Stephan	Lecture Hall M2
11:30 – 11:50	<b>Kojiro Higuchi and Takayuki Kihara</b> <i>Notions of Reducibility for Mass Problems</i>	
11:50 – 12:10	<b>Paul Shafer</b> <i>A Characterization of the Join-Irreducible Medvedev Degrees</i>	
12:10 – 12:30	<b>Andrew Lewis, André Nies, and Andrea Sorbi</b> <i>The First Order Theories of the Medvedev and Muchnik Lattices</i>	
12:30 – 12:50	<b>Douglas Cenzer, Rebecca Weber, and Guohua Wu</b> <i>Immunity for Closed Sets</i>	

SESSION 3C	Chair: Ian Pratt-Hartmann	Lecture Hall M3
11:30 – 11:50	<b>Stefan Dantchev and Barnaby Martin</b> <i>Cutting Planes and the Parameter Cutwidth</i>	
11:50 – 12:10	<b>Jingchao Chen</b> <i>Iterative Rounding for the Closest String Problem</i>	
12:10 – 12:30	<b>Chung-Chih Li</b> <i>Random Reference-Switching Functions</i>	
12:30 – 12:50	<b>Alla Sirokofskich</b> <i>Decidability of Sub-Theories of Polynomials over a Finite Field</i>	

SESSION 3D	Chair: Jean Cardinal	Lecture Hall M4
11:30 – 11:50	<b>Michael Fellows, Juraj Hromkovic, Frances Rosamond, and Monika Steinová</b> <i>Fixed-Parameter Tractability, Relative Kernelization and the Effectivization of Structural Connections</i>	
11:50 – 12:10	<b>Yijia Chen, Jörg Flum, and Moritz Müller</b> <i>Lower Bounds for Kernelizations and Other Preprocessing Procedures</i>	
12:10 – 12:30	<b>Jiamou Liu</b> <i>Dynamic Algorithms for Reachability Games</i>	
12:30 – 12:50	<b>Soumya Paul, R. Ramanujam, and Sunil Simon</b> <i>Stability Under Strategy Switching</i>	

SESSION 3E	Chair: Josef Berger	Lecture Hall M5
11:30 – 11:50	<b>J. B. Paris and A. Vencovská</b> <i>A General Representation Theorem for Probability Functions Satisfying Spectrum Exchangeability</i>	
11:50 – 12:10	<b>Lars Kristiansen and Bedeho Mesghina Wolde Mender</b> <i>The Semantics and Complexity of Successor-Free Nondeterministic Gödel's T and PCF</i>	
12:10 – 12:30	<b>Ján Kl'uka and Paul J. Voda</b> <i>A Simple and Practical Valuation Tree Calculus for First-Order Logic</i>	
12:30 – 12:50	<b>Christophe Fouqueré</b> <i>Computing Over Non-Linear Structures</i>	

Thursday, 23 July 2009

Overview

09:00 – 10:30	<b>TUTORIAL II.1</b> (Chair: Arnold Beckmann) <b>Lecture Hall P1</b>
	<b>Pavel Pudlák</b> (Czech Academy of Sciences, Prague) <i>Proof Complexity (Part 1)</i>
10:30 – 11:00	<b>COFFEE</b> <b>Foyer P</b>
11:00 – 12:40	<b>CONTRIBUTED TALKS</b> (Sessions 4A – 4E)
	<i>For the programme, see pages 17-18.</i>
12:40 – 14:30	<b>LUNCH</b>
14:30 – 16:00	<b>SPECIAL SESSIONS</b> (Sessions 4.2 – 6.2)
	<i>For the programme, see page 16.</i>
16:00 – 16:30	<b>COFFEE</b> <b>Foyer P</b>
16:30 – 17:30	<b>PLENARY LECTURE</b> (Chair: Dag Normann) <b>Lecture Hall P1</b>
	<b>Peter Koepke</b> (University of Bonn) <i>Ordinal Computability</i>

Thursday, 23 July 2009

Special Sessions

4.2	<b>Optimization and Approximation (Part 2)</b> <b>Lecture Hall P2</b> Chair: Gerhard Reinelt
14:30 – 15:15	<b>Friedrich Eisenbrand</b> <i>Integer Programming and Real-Time Scheduling</i>
15:15 – 16:00	<b>Marc Uetz</b> <i>From Optimal Algorithms to Optimal Mechanisms</i>
5.2	<b>Philosophical and Mathematical Aspects of Hypercomputation (Part 2)</b> <b>Lecture Hall M2</b> Chair: Philip Welch
14:30 – 15:15	<b>Mark Hogarth</b> <i>An Outline of a New Philosophy of Mathematics</i>
15:15 – 16:00	<b>Tim Button</b> <i>Hyperloops Do Not Threaten the Notion of an Effective Procedure</i>
6.2	<b>Relative Computability (Part 2)</b> <b>Lecture Hall M1</b> Chair: Alexandra A. Soskova
14:30 – 15:15	<b>Keng Meng Ng</b> <i>Limits on Jump Inversion for Strong Reducibilities</i>
15:15 – 16:00	<b>Hristo Ganchev</b> <i>Definability in the Local Theory of the omega-Enumeration Degrees</i>



Thursday, 23 July 2009

## Contributed Talks

SESSION 4A	Chair: Nikolay Vereshchagin	Lecture Hall M1
11:00 – 11:20	<b>Marius Zimand</b> <i>On Generating Independent Random Strings</i>	
11:20 – 11:40	<b>Kohtaro Tadaki</b> <i>Chaitin <math>\Omega</math> Numbers and Halting Problems</i>	
11:40 – 12:00	<b>Paul Brodhead and Bjørn Kjos-Hanssen</b> <i>Numberings and Randomness</i>	
12:00 – 12:20	<b>Paul Brodhead and Douglas Cenzer</b> <i>Effective Capacity and Randomness of Closed Sets</i>	

SESSION 4B	Chair: Benedikt Löwe	Lecture Hall M2
11:00 – 11:20	<b>Trifon Trifonov</b> <i>Dialectica Interpretation with Fine Computational Control</i>	
11:20 – 11:40	<b>Pavol Safarik</b> <i>On the Computational Content of Bolzano-Weierstraß</i>	
11:40 – 12:00	<b>Gyesik Lee</b> <i>Relationship Between Kanamori-McAloon Principle and Paris-Harrington Theorem</i>	
12:00 – 12:20	<b>Josef Berger</b> <i>A Characterisation of <math>BD-N</math></i>	
12:20 – 12:40	<b>Stefan Hetzl</b> <i>On the Form of Witness Terms</i>	

SESSION 4C	Chair: Victor Selivanov	Lecture Hall M3
11:00 – 11:20	<b>Florian Pelupessy and Andreas Weiermann</b> <i>Ackermannian Lower Bounds for Lengths of Bad Sequences of Monomial Ideals over Polynomial Rings in Two Variables</i>	
11:20 – 11:40	<b>L. Gordeev and A. Weiermann</b> <i>Elaborating Critical Points of Phase Transitions</i>	
11:40 – 12:00	<b>Michiel De Smet and Andreas Weiermann</b> <i>Phase Transitions Related to the Pigeonhole Principle</i>	
12:00 – 12:20	<del><b>T. Kotek and J. A. Makowsky</b> <i>Definability of Combinatorial Functions</i></del>	

SESSION 4D	Chair: Valentina Harizanov	Lecture Hall M4
11:00 – 11:20	<b>Matthew B. Giorgi, Thomas F. Kent, Andrew E. M. Lewis, and Andrea Sorbi</b> <i>Empty Intervals of Enumeration Degrees and Strong Minimal Covers</i>	
11:20 – 11:40	<b>Charles M. Harris</b> <i>Noncuppable Enumeration Degrees Via Finite Injury</i>	
11:40 – 12:00	<b>Mariya I. Soskova and Ivan N. Soskov</b> <i>Embedding Countable Partial Orderings in Degree Structures</i>	
12:00 – 12:20	<b>Angel V. Ditchev</b> <i>On Least Enumerations of Partial Structures</i>	
12:20 – 12:40	<b>Kuanysh Abeshev and Serikzhan Badaev</b> <i>A Note on Universal Numberings</i>	

SESSION 4E	Chair: Rafael Sorkin	Lecture Hall M5
11:00 – 11:20	<b>Ross Duncan and Simon Perdrix</b> <i>Graph States and the Necessity of Euler Decomposition</i>	
11:20 – 11:40	<del><b>Craziana Conte</b> <i>Modelling Quantum Information by Chu Spaces</i></del>	
11:40 – 12:00	<b>Mark S. Everitt, Martin L. Jones, Vivien M. Kendon, Neil B. Lovett, and Robert C. Wagner</b> <i>Quantum and Classical Analogue Computation Using Microwaves</i>	
12:00 – 12:20	<del><b>P. Zizzi and E. Pessa</b> <i>On the Role of Quantum Metalanguage in Brain Quantum Computation</i></del>	
12:20 – 12:40	<del><b>Mario Velez and Juan Ospina</b> <i>Generalized Temperley-Lieb Algebras and Quantum Computation</i></del>	

## Friday, 24 July 2009

## Overview

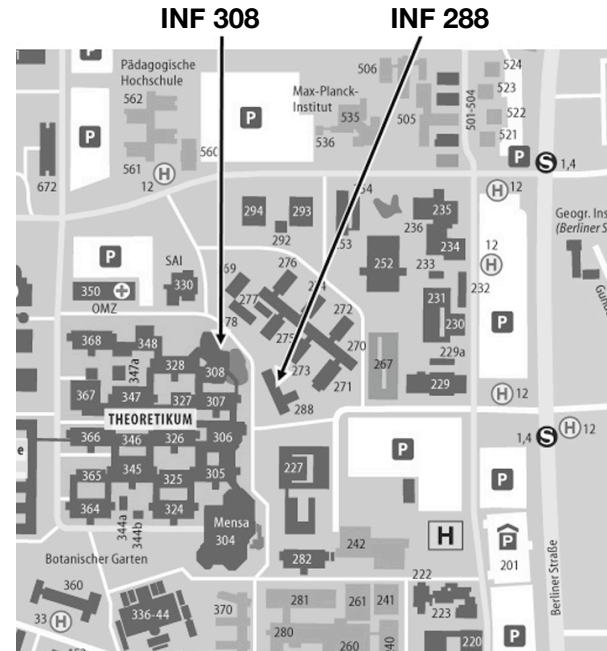
<b>09:00 – 10:30</b>	<b>TUTORIAL II.2</b> (Chair: Arnold Beckmann)	<b>Lecture Hall P1</b>
	<b>Pavel Pudlák</b> (Czech Academy of Sciences, Prague) Proof Complexity ( <i>Part 2</i> )	
<b>10:30 – 11:00</b>	<b>COFFEE</b>	<b>Foyer P</b>
<b>11:00 – 12:00</b>	<b>CONTRIBUTED TALKS</b> (Sessions 5A – 5D)	
	<i>For the programme, see pages 20-21.</i>	
<b>12:10 – 13:10</b>	<b>PLENARY LECTURE</b> (Chair: Klaus Ambos-Spies)	<b>Lecture Hall P1</b>
	<b>Vijay V. Vazirani</b> (Georgia Institute of Technology, Atlanta) <i>Combinatorial Algorithms for Convex Programs Capturing Market Equilibria and Nash Bargaining Solutions</i>	
<b>13:10 – 13:20</b>	<b>CLOSING</b>	<b>Lecture Hall P1</b>
<b>13:30 –</b>	<b>LUNCH</b>	

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## Contributed Talks

<b>SESSION 5A</b>	Chair: Peter van Emde Boas	<b>Lecture Hall M1</b>
11:20 – 11:40	<b>Hannah Bayer and Markus Nebel</b> <i>Evaluating Algorithms According to their Energy Consumption</i>	
11:40 – 12:00	<b>Timur Bakibayev</b> <i>Comparing Nontriviality for the Exponential Time Classes E and EXP</i>	
<b>SESSION 5B</b>	Chair: Antonio Montalbán	<b>Lecture Hall M2</b>
11:00 – 11:20	<b>Armin Hemmerling</b> <i>Function Operators Spanning the Arithmetical and the Polynomial Hierarchy</i>	
11:20 – 11:40	<b>Jiang Liu, Shengling Wang, and Guohua Wu</b> <i>Infima of d.r.e. Degrees</i>	
11:40 – 12:00	<b>G. Michele Pinna</b> <i>Petri Nets Unfoldings and the Individual/Collective Token Philosophy</i>	
<b>SESSION 5C</b>	Chair: Andreas Weiermann	<b>Lecture Hall M3</b>
11:00 – 11:20	<b>Gunther Mainhardt</b> <i>Some Properties of Traces as a Lattice under the Set Theoretic Inclusion</i>	
11:20 – 11:40	<b>Manuel Bodirsky, Miki Hermann, and Florian Richoux</b> <i>Complexity of Existential Positive First-Order Logic</i>	
11:40 – 12:00	<b>Binghui Guo, Wei Wei, and Zhiming Zheng</b> <i>Constraint Message Propagation Dynamics of Nonlinear Boolean Equations</i>	

SESSION 5D	Chair: Barry Cooper	Lecture Hall M4
11:00 – 11:20	<b>Mathias Barra and Philipp Gerhardy</b> <i>Skolem + Tetration is Well-Ordered</i>	
11:20 – 11:40	<b>Mathias Barra</b> <i>Relativised Detour Degrees</i>	
11:40 – 12:00	<b>Amir ben-Amram and Lars Kristiansen</b> <i>The Limits of Decidability and Tractability in Growth-Rate Analysis for Programs</i>	



- INF 308 Physics Lecture Theatre (P)**
  - Lecture Halls P1 – P2
  - Foyer P
  
- INF 288 Mathematical Institute (M)**
  - Lecture Halls M1 – M5