

# Sofia University “St. Kliment Ohridski”



## CiE 2011 Models of Computation in Context 7th Conference on Computability in Europe Sofia, Bulgaria, June 27-July 2, 2011

### Program Committee

Selim Akl (Kingston ON), Albert Atserias (Barcelona), Anthony Beavers (Evansville IN), Arnold Beckmann (Swansea), Paola Bonizzoni (Milano), Anne Condon (Vancouver BC), Thierry Coquand (Gothenburg), Anuj Dawar (Cambridge), Fernando Ferreira (Lisbon), Denis Hirschfeldt (Chicago IL), Radha Jagadeesan (Chicago IL), Neil Jones (Copenhagen), Natasha Jonoska (Tampa), Achim Jung (Birmingham), Viv Kendon (Leeds), Julia Knight (Notre Dame IN), Phokion Kolaitis (Santa Cruz CA), Benedikt Löwe (Amsterdam), Elvira Mayordomo (Zaragoza), Dag Normann (Oslo, co-chair), Jan-Willem Romeijn (Groningen), Marie-France Sagot (Lyon), Dirk Schlimm (Montréal QC), Anthony Seda (Cork), Nir Shavit (Tel Aviv), Ivan Soskov (Sofia, co-chair), Alexandra Soskova (Sofia), Sarah Teichmann (Cambridge), Peter van Emde Boas (Amsterdam), Jan van Leeuwen (Utrecht), Klaus Wagner (Würzburg), Andreas Weiermann (Ghent)

### Invited Speakers

Christel Baier (TU Dresden), Michiel van Lambalgen (University of Amsterdam), Jack Lutz (Iowa State University), Antonio Montalban (University of Chicago), Geoffrey Pullum (University of Edinburgh), Alexandra Shlapentokh (East Carolina University), Theodore Slaman (UC Berkeley), Janet Thornton (European Bioinformatics Institute, Cambridge), Alasdair Urquhart (University of Toronto)

### Organizing Committee

Doug Censer, Angel Dichev, Damir Dzhafarov, Hristo Ganchev, Dimitar Guelev, Vladislav Nenchev, Stela Nikolova, Dimitar Shiachki, Alexandra Soskova (chair), Mariya Soskova, Stefan Vatev, Mitko Yanchev, Anton Zinoviev

# Computability in Europe 2011 Schedule

## Models of Computation in Context



### PROGRAMME

**Monday 27.06.11**

14:00 – 16:30	<b>Registration</b>
16:30 – 17:30	<b>Coffee</b>
17:30 – 18:00 AULA	<b>OPENING</b>
18:00 – 19:00 AULA	<i>CHAIR: B. Löwe</i>  <i>APAL Lecture</i> <i>Alasdair Urquhart</i>
19:00	<b>Welcome Cocktail in the garden of the Rectorate</b>

**Tuesday 28.06.11**

9:00 – 9:30	<b>Coffee</b>				
9:30 – 11:00	<b>Special Sessions</b>				
		<b>CAAG</b> Aula <i>CHAIR: A. Shlapentokh</i>	<b>NC</b> Conference Room 3 <i>CHAIR: E. Csuhaj-Varjú</i>	<b>TTC</b> Conference Room 1 <i>CHAIR: P. Koepke</i>	
	9:30	<b>Russel Miller</b> “Adapting Rabin's Theorem for Differential Fields”	<b>Victor Mitrana</b> “Splicing Systems: Accepting versus Generating”	<b>Sy D. Friedman</b> “Polynomial-time Set Recursion”	
	10:15	<b>Valentina Harizanov</b> “Orders on Structures and Structure of Orders”	<b>Natalio Krasnogor</b> “Steps Towards a Unified Model Prototyping Strategy for multi-(proto)cellular computing”	<b>Philip Welch</b> “A Generalised Dynamical System, Infinite Time Register Machines and $\Pi^1_1$ -Comprehension”	
11:30 – 12:30  AULA	<i>CHAIR: Dag Normann</i>  <b>Tutorial</b> <b>Geoffrey Pullum</b> “Linguistics for Computability Theorists: Three Tutorial Lectures”				
12:30 – 14:30	<b>Lunch</b>				
14:30 – 15:30  AULA	<i>CHAIR: Julia Knight</i>  <b>Alexandra Shlapentokh</b> “Undecidability and Definitions of Integers and Itegral Functions”				
16:00 – 18:00	<b>Contributed Talks 1, C1</b>				
		Session I Aula <i>CHAIR: W. Brattka</i>	Session II Conference Room 1 <i>CHAIR: A. Dítchev</i>	Session III Conference Room 2 <i>CHAIR: D. Skordev</i>	Session IV Conference Room 3 <i>CHAIR: S. Smets</i>
	16:00	<b>D. Cenzer, V. Harizanov, J. Remmel</b>	<b>P. Balbiani</b>	<b>V. Selivanov</b>	<b>V. Kendon</b>
	16:25	<b>S. Vandendriessche</b>	<b>E. Pribavkina, E. Rodako</b>	<b>P. Hertling, V. Selivanov</b>	<b>C. Rogers</b>
	16:50	<b>R. M. Steiner</b>	<b>D. Duchier, J. Durand-Lose, M. Senot</b>	<b>I. Khaliq, B. Khoussainov, J. Liu</b>	<b>J. Lathrop, J.Lutz, B. Patterson</b>
	17:15	<b>S. Vatev</b>	<b>Y. Chen, J. Flum, M. Müller</b>	<b>M. De Smet , A. Weiermann</b>	<b>P. Arrighi, R. Fargetton, V. Nesme, E. Thierry</b>
17:40		<b>J. Ackermann, I. Koch</b>	<b>M. Raffinot</b>	<b>H. Umeo, K. Nishide, T. Yamawaki</b>	

## Wednesday 29.06.11

9:30 – 10:30 AULA	<p><b>CHAIR: T. Tinchev</b></p> <p style="text-align: center;"><b>Tutorial</b> <b>Geoffrey Pullum</b> “Linguistics for Computability Theorists: Three Tutorial Lectures”</p>				
11:00 – 12:30		<b>Special Sessions</b>			
		<p><b>CAAG</b> Aula <i>CHAIR: D. Spreen</i></p>	<p><b>NC</b> Conference Room 3 <i>CHAIR: I. Petre</i></p>	<p><b>RPW</b> Conference Room 1 <i>CHAIR: V. Kendon</i></p>	
	11:00	<p><b>Vasco Brattka</b> “Computer Analysis in the Weihrauch Lattice”</p>	<p><b>Martin Kutrib</b> “Nature-Based Problems in Cellular Automata”</p>	<p><b>Prakash Panangaden</b> “Quantum Information Channels in Curved Spacetime”</p>	
	11:45	<p><b>Ulrich Berger</b> “Program extraction in computable analysis”</p>	<p><b>Agustín Riscos-Núñez</b> “Current developments on computational modeling using P systems”</p>	<p><b>Časlav Brukner</b> “Quantum Correlations with No Casual Order”</p>	
12:30 – 14:30	<b>Lunch</b>				
14:30 – 15:30 AULA	<p><b>CHAIR: Prakash Panangaden</b></p> <p style="text-align: center;"><b>Antonio Montalban</b> “The Jump of a Structure”</p>				
16:00 – 17:00 AULA	<p><b>CHAIR: Prakash Panangaden</b></p> <p style="text-align: center;"><b>Christel Baier</b> “Quantitative Analysis of Randomized Distributed Systems and Probabilistic Automata”</p>				
17:15 – 18:50		<b>Contributed Talks 2, C2</b>			
		<p>Session I Aula <i>CHAIR: R. Miller</i></p>	<p>Session II Conference Room 1 <i>CHAIR: D. Cenzer</i></p>	<p>Session III Conference Room 2 <i>CHAIR: V. Selivanov</i></p>	<p>Session IV Conference Room 3 <i>CHAIR: L. Kristiansen</i></p>
	17:15	<b>A. Taveneaux</b>	<b>A. Farjudian</b>	<b>J. Case, S. Jain, Y. S. Ong, P. Semukhin, F. Stephan</b>	<b>A. Kreuzer</b>
	17:40	<b>M. Hoyrup</b>	<b>D. Skordev, I. Georgiev</b>	<b>T. Kihara, K. Higuchi</b>	<b>T. Trifonov</b>
	18:05	<b>S. Vermeeren</b>	<b>M. Hoyrup, C. Rojas, K. Weihrauch</b>	<b>T. Kihara</b>	<b>S. Sanders</b>
18:30	<b>K. Miyabe</b>	<b>P. Potgieter</b>		<b>D. Hernest</b>	

**Thursday 30.06.11**

9:30 – 10:30 AULA	<p><b>CHAIR: D. Spreen</b></p> <p><b>Tutorial</b> <b>Geoffrey Pullum</b> “Linguistics for Computability Theorists: Three Tutorial Lectures”</p>		
11:00 – 12:30	<b>Special Sessions</b>		
	<b>CCT</b> Aula <i>CHAIR: D. Cenzer</i>	<b>CL</b> Conference Room 3 <i>CHAIR: T. Tinchev</i>	<b>RPW</b> Conference Room 1 <i>CHAIR: S. Smets</i>
	11:00	<p><b>Rachel Epstein</b> “Jump classes and automorphisms of the c.e. sets”</p>	<p><b>Klaus U. Schulz, Stoyan Mihov</b> “Computation of Similarity - Similarity Search as Computation”</p>
11:45	<p><b>Mingzhong Cai</b> “Minimality and Jump Classes”</p>	<p><b>Ian Pratt-Hartmann</b> “A Complexity-Theoretic Study of some Fragments of English”</p>	<p><b>Joe Fitzsimons</b> “Proving the results of quantum computations”</p>
12:30 – 14:30	<b>Lunch</b>		
14:30 – 15:30 AULA	<p><b>CHAIR: Paola Bonizzoni</b></p> <p><b>Florian Markowetz</b> “ Integrative analysis of breast cancer: Dissecting heterogeneity in samples and signals”</p>		
16:00 – 17:00 AULA	<p><b>CHAIR: Paola Bonizzoni</b></p> <p><b>Tutorial</b> <b>Jack Lutz</b> “Effective Fractal Dimensions”</p>		
17:30 – 19:00  Conference room 3	<p><b>CHAIR: M. Soskova</b></p> <p><b>Women in Computability</b></p>		

## Friday 01.07.11

9:30 – 10:30 AULA	<i><b>CHAIR: Olivier Bournez</b></i>  <b>Tutorial</b> <b>Jack Lutz</b> “Effective Fractal Dimensions”			
11:00 – 12:30	<b>Special Sessions</b>			
	<b>CCT</b> Aula <i><b>CHAIR: D. Cenzer</b></i>	<b>CL</b> Conference Room 3 <i><b>CHAIR: T. Tincev</b></i>	<b>TTC</b> Conference Room 1 <i><b>CHAIR: D. Normann</b></i>	
	11:00	<b>Charles Harris</b> “Goodness and Jump Inversion in the Enumeration Degrees”	”	<b>Merlin Carl</b> “Computational approach to an alternative 'working environment' for the constructible universe”
11:45	<b>Guohua Wu</b> “Cupping and Diamond Embeddings: A Unifying Approach”		<b>Philipp Schlicht</b> “Automata on ordinals and linear orders”	
12:30 – 14:30	<b>Lunch</b>			
14:30 – 15:30 AULA	<i><b>CHAIR: Alexandra Shlapentokh</b></i>  <b>Theodore Slaman</b> “The First-order Fragments of Second-order Theories”			
16:00 – 17:10	<b>Contributed Talks 3, C3</b>			
	Session I Aula <i><b>CHAIR: T. Slaman</b></i>	Session II Conference Room 1 <i><b>CHAIR: U. Berger</b></i>	Session III Conference Room 2 <i><b>CHAIR: L. Atunes</b></i>	Session IV Conference Room 3 <i><b>CHAIR: I. Soskov</b></i>
	16:00	<b>A. Marks</b>	<b>S. Koppelberg, I. Düntsch, M. Winter</b>	<b>D. Genova</b>
	16:25	<b>K. H Lee, C. Harris, B. Cooper</b>	<b>A. Madeira, M. A. Martins, L. Barbosa</b>	<b>R. Loukanova</b>
16:50	<b>T. Kräling</b>	<b>A. Matos, A. Souto, A. Teixeira</b>	<b>V. Stoykova</b>	<b>F. Manea</b>  <b>X. Gu, J. Lutz, S. Nandakumar, J.Royer</b>  <b>A. Ben-Amram, L. Kristiansen</b>
17:30 – 19:00 AULA	<i><b>CHAIR: D. Normann</b></i>  <b>Annual General Meeting</b>			
19:00	<b>Conference Dinner</b>			

**Saturday 02.07.11**

9:30 – 10:30 AULA	<i>CHAIR: Arnold Beckmann</i>				
	<b>Tutorial Jack Lutz</b> “Effective Fractal Dimensions”				
10:45 – 12:00		<b>Contributed Talks 4, C4</b>			
		Session I Aula <i>CHAIR: B. Cooper</i>	Session II Conference Room 1 <i>CHAIR: N. Jonoska</i>	Session III Conference Room 2 <i>CHAIR: V. Harizanov</i>	Session IV Conference Room 3 <i>CHAIR: J. Lutz</i>
	10:45	<b>M. Cai</b>	<b>S. N. Krishna, G. Ciobanu</b>	<b>C. C. Li</b>	<b>I. Georgescu</b>
	11:10	<b>S. Wang, G. Wu</b>		<b>Pavol Safarik</b>	<b>P. Tarau, B. Luderman</b>
11:35	<b>S. Ospichev</b>		<b>G. Igusa</b>	<b>F. Hernández-Quiroz, R. Morado</b>	
12:15 – 13:00 AULA	<i>CHAIR: Anuj Dawar</i>				
	<b>Michiel van Lambalgen</b> “Logic in a neuroscience lab”				
13:15 – 13:30	<b>Closing</b>				

**CAAG** - Computability in Analysis, Algebra, and Geometry

**CCT** - Classical Computability Theory

**CL** - Computational Linguistics

**NC** - Natural Computing

**RPW** - Relations between the physical world and formal models of computability

**TTC** - Theory of transfinite computations

# **Practical Information**

## **Conference Venue**

The Conference will be situated in the Rectorate - the central building of Sofia University. Address: 15, Tzar Osvoboditel Blvd. In your conference bag you will find a detailed map of this neighbourhood, where nearby hotels are marked. You can reach the Rectorate by bus using lines 94, 280 and 306.

In your conference bag you can find also a detailed map of the Rectorate. Coffee breaks will be situated in front of the AULA. Lectures will take place in the AULA and conference rooms 1, 2 and 3.

## **Registration desk and Conference Bureau**

The registration desk will be open on 27.06 from 14:00 to 17:30 in the central foyer of the Rectorate and on 28.06 from 10:00 to 17:00 in the Conference Bureau, located in room 218, which is also highlighted on the map.

Payments (late registration fees, conference dinner, student accommodation, student grants) will be arranged in the Conference Bureau as well. The conference bureau will be open on 29.06 and on 30.06 from 14:00 to 16:00.

If you require any further assistance do not hesitate to contact the organizers or our assistants, identifiable by their orange name tags.

## **Internet Access**

WiFi access will be available in the AULA. There are two computing labs which can be used by participants during the conference. One of them is situated in the north wing of the building and the other is in the University Library. You can find login instructions in each lab. The computing labs are open weekdays from 11:00 to 17:00.

There are also a number of hotspots throughout the city center for free internet access via WiFi, provided by Sofia Municipality.

## **Association Computability in Europe, Annual General Meeting, 1 July 2011**

The CiE AGM will give members of the Association Computability in Europe an opportunity to discuss the workings of the Association and its Conference Series.



There will be short reports from the Association President and the Chairs of CiE Subcommittees

## **Social events**

### **Welcome Cocktail**

The welcome cocktail will take place in the garden of the Rectorate building on 27.06 starting at 19:00.

### **Conference Dinner**

The conference dinner will be on 01.07 in the restaurant Lebeda situated by the shore of Pancharevo Lake. Buses will take the participants to the restaurants and back, starting from the Rectorate at 19:00.

## **Women in Computability Workshop**

The Women in Computability workshop will take place on June 30, from 17:30 in Conference Room 1. The Women in Computability dinner will start at 19:00 in Restaurant “Chergata”, 34 Shipka Street.

## **Mentorship Programme**

The first session of the mentorship programme will be during the second coffee break, starting at 11:00 on 28.06. The mentees will be introduced to their mentors

## **Public transportation and Taxi**

Public transport in Sofia is available from 05:00. to 23:00, all year round. The price of a single ticket is 1.00 BGN. Alternatively, you can buy a combined ticket for ten trips that costs BGN 8.00; please note that this combined ticket may be used by one person only and you are expected to present the last ticket for inspection.

The typical price for a taxi is approximately 0.70 BGN/km. Prices are indicated on the side and front windows of the taxi cab. You can order a taxi by phone. Some larger taxi companies are listed below.

OK Supertrans Tel: 02 973 21 21

Taxi S Express Tel: 02 91280

Radio SV Taxi Tel: 02 91263

## **Dining around the conference venue**

Club Alma Mater is offering a set lunch menu for the duration of the conference. The club is situated in the Rectorate building on the ground floor. You can buy lunch coupons on 27.06 and 28.06 for all or some days of the conference. The price is 14 BGN per day. There is a choice between a vegetarian and a non-vegetarian meal.

Alternatively you can dine at one of the numerous restaurants around the Rectorate. For a fuller list of restaurants, bars and cultural events in Sofia visit <http://www.programata.bg>

Some possibilities are listed below:

### **Krivoto**

Address: Sofia, 10 Sv. K. Ohridski Str.,  
next to Sofia University

Phone: 02 943 84 03

Website: [www.krivoto.com](http://www.krivoto.com)

### **O!Shipka**

Address: Sofia, 11 Shipka Str.

Phone: 02 944 92 88

Website: [www.oshipka.net](http://www.oshipka.net)

### **Chergata**

Address: Sofia, 34 Shipka str.

Phone: 02 9447777

Website: <http://www.tchergata.bg/>

### **Salt and Sweet**

Address: Sofia, 8 Sheynovo Street

Phone: 02 480 37 55

Website: <http://www.saltandsweet.com/>

### **Skara Bar**

Address: Sofia, 2 Dimitar Grekov Str.

In the building of "Sfumato Theater"

Phone: 02 483 06 96

Website: <http://www.skarabar.com>

## **Architekt's Club**

Address: Sofia, 11 Krakra Str.

Phone: 088 888 09 79

## **Tours**

Our tour operator PTM International offers some tours for the accompanying persons.

- **Sofia – Boyana Church** 10:00 – 14:00, 28.06

Sofia sightseeing tour by bus and walk in the central area.

- **Rila Monastery** 09:00 -17:00, 29.06

The Rila Monastery, the most impressive monument from the Bulgarian National Revival period rises amidst the rugged beauty of the Rila Mountain.

- **Povdiv and the Bachkovo Monastery** 08:00 -18:00, 30.06

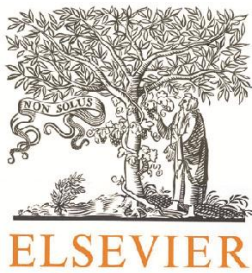
A city with 3,000 years long history, rich in archaeological, historical and cultural landmarks.

- **Koprivshitsa** 09:00 – 17:00, 01.07

The vivacious village of Koprivshitsa – the heart of the Bulgarian traditions and crafts – houses with big eaves, stone fences and wide wooden gates.



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