The Abdus Salam International Centre for Theoretical Physics

Summer School and Conference Mathematics, Algorithms and Proofs

Organizer(s): Directors: T. Coquand, A. Dickenstein, T. Kadeishvili, F. Sergeraert. Local Organizer: L. Goettsche
Trieste - Italy, 11 - 29 August 2008

Venue: Leonardo da Vinci Building Main Lecture Hall

Final programme

Monday, 11 August 2008 (Room:Leonardo da Vinci Building, Lobby)

08:30 - 10:30	--- REGISTRATION AND ADMINISTRATIVE FORMALITIES ---
10:30 - 10:45	(Room: Leonardo da Vinci Building Main Lecture Hall) **Lê Dung Tráng** / *ICTP, Trieste, Italy* **Opening Address**
10:45 - 11:45	**Douglas S. Bridges** / *University of Canterbury, Christchurch, New Zealand* **Constructive analysis**
11:45 - 14:00	--- Lunch break ---
14:00 - 15:00	**Francis Sergeraert** / *Institut Fourier, St Martin d 'Hères, France* **Introduction to combinatorial homotopy**
15:00 - 15:15	--- Break ---
15:15 - 16:15	**Thierry Coquand** / *Chalmers University, Gothenberg, Sweden* **Constructive logic**
16:15 - 16:30	--- Break ---
16:30 - 17:30	**Francis Sergeraert** / *Institut Fourier, St Martin d 'Hères, France* **Introduction to combinatorial homotopy**

Tuesday, 12 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30	**Teo Mora** / *Università degli Studi di Genova, Genova, Italy* **Computational algebra**
10:30 - 11:00	--- Break ---
11:00 - 12:00	**Ihsen Yengui** / *Faculté des Sciences de Sfax, Sfax, Tunisia* **Constructive Algebra**
12:00 - 14:00	--- Lunch break ---
14:00 - 15:00	**Thierry Coquand** / *Chalmers University, Gothenberg, Sweden* **Constructive logic**
15:00 - 15:30	--- Break ---
15:30 - 16:30	**Douglas S. Bridges** / *University of Canterbury, Christchurch, New Zealand* **Constructive analysis**

Wednesday, 13 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30	**Teo Mora** / *Università degli Studi di Genova, Genova, Italy* **Computational algebra**
10:30 - 11:00	--- Break ---
11:00 - 12:00	**Francis Sergeraert** / *Institut Fourier, St Martin d 'Hères, France* **Introduction to combinatorial homotopy**
12:00 - 14:00	--- Lunch break ---
14:00 - 15:00	**Thierry Coquand** / *Chalmers University, Gothenberg, Sweden* **Constructive logic**
15:00 - 15:30	--- Break ---
15:30 - 16:30	**Douglas S. Bridges** / *University of Canterbury, Christchurch, New Zealand* **Constructive analysis**

Thursday, 14 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30	**Gert-Martin Greuel** / *University of Kaiserslautern, Kaiserslautern, Germany* **Algorithms and algebraic geometry**
10:30 - 11:00	--- Break ---
11:00 - 12:00	**Francis Sergeraert** / *Institut Fourier, St Martin d 'Hères, France* **Introduction to combinatorial homotopy**
12:00 - 14:00	--- Lunch break ---

14:00 - 15:00 **Ihsen Yengui** / *Faculté des Sciences de Sfax, Sfax, Tunisia*
Constructive Algebra

15:00 - 15:30 --- Break ---

15:30 - 16:30 (Room: Computer Lab. (LB))
Stefan Steidel / *Technical University of Kaiserslautern, Germany*
Singular tutorial

19:00 - 21:00 --- RECEPTION (AT ADRIATICO GUEST HOUSE) ---

Friday, 15 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30 **Gert-Martin Greuel** / *University of Kaiserslautern, Kaiserslautern, Germany*
Algorithms and algebraic geometry

10:30 - 11:00 --- Break ---

11:00 - 12:00 **Douglas S. Bridges** / *University of Canterbury, Christchurch, New Zealand*
Constructive analysis

12:00 - 14:00 --- Lunch break ---

14:00 - 15:00 **Ihsen Yengui** / *Faculté des Sciences de Sfax, Sfax, Tunisia*
Constructive Algebra

15:00 - 15:30 --- Break ---

15:30 - 16:30 (Room: Computer Lab. (LB))
Stefan Steidel / *Technical University of Kaiserslautern, Germany*
Singular tutorial

Monday, 18 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30 **Gert-Martin Greuel** / *University of Kaiserslautern, Kaiserslautern, Germany*
Algorithms and algebraic geometry

10:30 - 11:00 --- Break ---

11:00 - 12:00 **Peter Paule** / *University of Linz, Hagenberg, Austria*
Lecture "A=B"

12:00 - 14:00 --- Lunch break ---

14:00 - 15:00 **Teo Mora** / *Università degli Studi di Genova, Genova, Italy*
Computational algebra

15:00 - 15:30 --- Break ---

15:30 - 16:30 **Erik Palmgren** / *University of Uppsala, Uppsala, Sweden*
Point free topology

16:30 - 17:00 --- Break ---

17:00 - 18:00 (Room: Computer Lab. (LB))
Stefan Steidel / *Technical University of Kaiserslautern, Germany*
Singular tutorial

Tuesday, 19 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30 **Gert-Martin Greuel** / *University of Kaiserslautern, Kaiserslautern, Germany*
Algorithms and algebraic geometry

10:30 - 11:00 --- Break ---

11:00 - 12:00 **Peter Paule** / *University of Linz, Hagenberg, Austria*
Lecture "A=B"

12:00 - 14:00 --- Lunch break ---

14:00 - 15:00 **Teo Mora** / *Università degli Studi di Genova, Genova, Italy*
Computational algebra

15:00 - 15:30 --- Break ---

15:30 - 16:30 **Erik Palmgren** / *University of Uppsala, Uppsala, Sweden*
Point free topology

16:30 - 17:00 --- Break ---

17:00 - 18:00 (Room: Computer Lab. (LB))
Stefan Steidel / *Technical University of Kaiserslautern, Germany*
Singular tutorial

Wednesday, 20 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30 **Peter Paule** / *University of Linz, Hagenberg, Austria*
Lecture "A=B"

10:30 - 11:00 --- Break ---

11:00 - 12:00 **Erik Palmgren** / *University of Uppsala, Uppsala, Sweden*
Point free topology

12:00 - 14:00 --- Lunch break ---

14:00 - 15:00 **Tornike Kadeishvili** / *A. Razmadze Mathematical Institute, Tbilisi, Georgia*
Operadic algebraic topology

15:00 - 15:30 --- Break ---

15:30 - 16:30 **Ihsen Yengui** / *Faculté des Sciences de Sfax, Sfax, Tunisia*
Constructive Algebra

Thursday, 21 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30	**Peter Paule** / *University of Linz, Hagenberg, Austria* **Lecture "A=B"**
10:30 - 11:00	--- Break ---
11:00 - 12:00	**Erik Palmgren** / *University of Uppsala, Uppsala, Sweden* **Point free topology**
12:00 - 14:00	--- Lunch break ---
14:00 - 15:00	**Thierry Coquand** / *Chalmers University, Gothenberg, Sweden* **Constructive logic**
15:00 - 15:30	--- Break ---
15:30 - 16:30	**Tornike Kadeishvili** / *A. Razmadze Mathematical Institute, Tbilisi, Georgia* **Operadic algebraic topology**

Friday, 22 August 2008 (Room:Leonardo da Vinci Building Main Lecture Hall)

09:30 - 10:30	**Peter Paule** / *University of Linz, Hagenberg, Austria* **Lecture "A=B"**
10:30 - 11:00	--- Break ---
11:00 - 12:00	**Tornike Kadeishvili** / *A. Razmadze Mathematical Institute, Tbilisi, Georgia* **Operadic algebraic topology**
12:00 - 15:00	--- Lunch break ---
14:00 - 15:00	**Tornike Kadeishvili** / *A. Razmadze Mathematical Institute, Tbilisi, Georgia* **Operadic algebraic topology**

Monday, 25 August 2008 - CONFERENCE (Room:Adriatico Guest House Kastler Lecture Hall)

25 August 2008

09:20 - 09:50	--- REGISTRATION ---
09:50 - 10:00	**Welcome address**
10:00 - 10:50	**Peter Schuster** / *Universitaet Muenchen, Muenchen, Germany* **Spectral Schemes as Ringed Lattices (joint work with Thierry Coquand and Henri Lombardi)**
10:50 - 11:00	--- Break ---
11:00 - 11:50	**Henri Lombardi** / *Université de France-Comte, Besançon, France* **Constructive commutative algebra and families of algebraic identities**
11:50 - 14:00	--- Lunch Break ---
14:00 - 14:50	**Freek Wiedijk** / *Nijmegen, Holland* **Merging the procedural and declarative proof styles**

14:50 - 15:00 --- Break ---

15:00 - 15:50 **Miriam Andrés** / *Universidad de La Rioja, La Rioja, Spain*
Automated theorem proving in simplicial topology with ACL2

15:50 - 16:10 --- Coffee break ---

16:10 - 17:00 **Giuseppe Rosolini** / *Università di Genova, Genova, Italy*
A constructive theory of classes and sets

Tuesday, 26 August 2008 (Room:Adriatico Guest House Kastler Lecture Hall)

26 August 2008

10:00 - 10:50 **Marie-Françoise Roy** / *Université de Rennes, Rennes, France*
Certificates of positivity on a simplex in the multivariate Bernstein basis

10:50 - 11:00 --- Break ---

11:00 - 11:50 **Manuel Kauers** / *Johannes Kepler University, Linz, Austria*
Walking in the Quarter Plane

11:50 - 14:00 --- Lunch break ---

14:00 - 14:50 **Guillermo Matera** / *Universidad Nacional de General Sarmiento, Buenos Aires, Argentina*
Fast computation of a rational point of a variety over a finite field

14:50 - 15:00 --- Break ---

15:00 - 15:50 **Lihong Zhi** / *Academy of Mathematics and System Sciences, Beijing, P.R. of China*
Solving polynomial systems via symbolic-numeric elimination method

15:50 - 16:10 --- Coffee break ---

Wednesday, 27 August 2008 (Room:Adriatico Guest House Kastler Lecture Hall)

09:20 - 09:50 **Chunming Yuan** / *Academy of Mathematics and Systems Science, Beijing, P.R. of China*
A Characteristic set method for solving Boolean equations and applications in cryptanalysis of stream ciphers

09:50 - 10:00 --- Break ---

10:00 - 10:50 **Gabriela Jeronimo** / *Universidad de Buenos Aires, Buenos Aires, Argentina*
On sign conditions over real multivariate polynomials

10:50 - 11:00 --- Break ---

11:00 - 11:50 **Alban Quadrat** / *INRIA, APICS Project, Sophia Antipolis, France*
New perspectives in algebraic systems theory

11:50 - 14:00 --- Lunch break ---

Thursday, 28 August 2008 (Room:Adriatico Guest House Kastler Lecture Hall)

10:00 - 10:50 **Micaela Mayero** / *LIPN-UMR CNRS, Université Paris-Nord, Villetaneuse, France*
Certification of numerical analysis programs

10:50 - 11:00 --- Break ---

11:00 - 11:50 **Ulrich Berger** / *University of Wales Swansea, Swansea, UK*
A coinductive approach to digital computation

11:50 - 14:00 --- Lunch break ---

14:00 - 14:50 **Andrej Bauer** / *FMF, Ljubljana*
Efficient computation with Dedekind reals (joint work with Paul Taylor)

14:50 - 15:00 --- Break ---

15:00 - 15:50 **Bas Spitters** / *Foundations of Mathematics and Computer Science, Nijmegen, Netherland*
A computer verified, monadic, functional implementation of the integral. (joint work with Russell O'Connor)

15:50 - 16:10 --- Coffee break ---

16:10 - 17:00 **Francis Sergeraert** / *Institut Fourier, St. Martin d'Hères, France*
Effective Constructive Algebraic Topology

Friday, 29 August 2008 (Room:Adriatico Guest House Kastler Lecture Hall)

10:00 - 10:50 **Ulrich Kohlenbach** / *Technishche Universitaet Darmstadt, Darmstadt, Germany*
Proof interpretations, "Hard Analysis" and Ergodic theory

10:50 - 11:00 --- Break ---

11:00 - 11:50 **Helmut Schwichtenberg** / *Mathematisches Institut der Universitaet Munchen, Munchen, Germany*
Decorating proofs