Ordered Algebraic Structures and Related Topics
CIRM – Luminy France - October 12-16 2015

Monday 12 - Ordered Groups, Real Algebra and Valuations.

9 - 9:10 Opening

9:15 - 10 A. Pfister (Mainz, Germany),
An elementary proof of Hilbert's theorem on ternary quartics

10 - 10 :30 CAFE

10:30 - 11 M. Spivakovsky (Toulouse),
Generalized Puiseux expansion of a valuation and local uniformization in arbitrary characteristic

11:10 - 11:40 F.-V. Kuhlmann (Katowice, Poland),
Symmetrically complete ordered fields

11:50 - 12:20 B. Teissier (Paris 7),
Valued noetherian local rings versus valued fields

12 :30 LUNCH AND FREE TIME

15 :45 - 16:45 J. Koenigsmann (Oxford, UK),
Survey. How Galois theory knows arithmetic via valuations

16:45 - 17:15 CAFE

17:15 - 17:45 L. Bröcker (Münster, Germany)
On p-adic semialgebraic sets

17:55 - 18:25 N. Schwartz (Passau, Germany),
The sums of squares in a real field

18:35 - 19:05 - E. Becker (Dortmund, Germany),
Sums of Powers in Algebraic Function Fields of one Variable

19:30 DINNER

Tuesday13 - Model Theory and Algorithm Topics.

9 - 10 : S. Basu (Purdue Univ., USA),
A survey of recent advances in quantitative and algorithmic real algebraic geometry.

10 - 10:30 CAFE

10:30 - 11 : D. Perrucci (Buenos Aires, Argentine),
Elementary recursive degree bounds for the Positivstellensatz,
Hilbert's 17th problem, and the Real Nullstellensatz

11:10 - 11:40 : C. Riener (Aalto Univ., Finland),
Topological complexity of symmetric semi-algebraic sets

11:50 - 12:20 : H. Lombardi (Besançon),
On the constructive algebra of real numbers

12 :30 LUNCH AND FREE TIME

15:45 -16:45 : L. van den Dries (Urbana, USA),
Survey : The ordered differential field of transseries

16:45 - 17:15 CAFE

17:15 - 17:45 : M. Tressl (Manchester, UK) ,
Model Theory of Real Closed Rings

17:55 -18:25 : S. Kuhlmann (Konstanz, Germany),
Real Closed Fields and Models of Peano Arithmetic

18:35 - 19:05 : F. Jahnke (Münster, Germany)
Dp-minimal ordered fields

19:30 DINNER

20:30 - 22:30 : Young researchers evening session
A. Blaszczok (Univ. of Silesia, Pologne), Q. Brouette (Univ. Mons, Belgique),
C. Goel (Univ. Konstanz, Germany), M. Infusino (Univ. Konstanz, Germany),
M. Thomas (Univ. Konstanz, Germany), G. Violet (Univ. Konstanz, Germany).

Wednesday 14 - Quadratic forms ; Abstract Spaces of Orderings ; Real Semi-groups.

9 - 9:30 : Homage to Murray Marshall.

9:30 - 10:20 : F. Miraglia (S. Paulo, Brazil)
Survey : Abstract theory of quadratic forms and its applications in ring theory.

10:25 - 10:45 CAFE

10:45 - 11:15 : P. Gladki (Katowice, Poland),
Witt equivalence of various classes of fields

11:20 - 11:50 : Katarzyna Kuhlmann (Katowice, Poland),
Orderings and R-places of function fields

11:55 - 12:25 : V. Astier (Dublin, Ireland),
Signatures of hermitian forms and orderings on some algebras with involution
(joint work with Thomas Unger)

12:30 LUNCH and FREE AFTERNOON

18:00 : Poster session opening

19 :30 DINNER

20:45 – 22:15 : Women in Mathematics session
- Presentation of the recently launched International Mathematical Union
Committee for Women in Mathematics.
Marie-Françoise Roy (chair of the committee)
- Roundtable discussion on the gender gap in mathematics.
Panel : Francesca Acquistapace (Italie), Anna Blaszczok (Pologne), Charu Goel
(Allemagne), Noa Lavi (Israël), Vicky Powers (USA), Marie-Françoise Roy
(France), Carol Wood (USA).

Thursday 15 - Real Algebraic and Analytic Geometry ; O-minimality.

9 - 10 : J.-P. Rolin (Dijon),
Survey : Logarithmico-exponential series and fractal analysis

10 - 10:30 CAFE

10:30 - 11 : Tobias Kaiser (Passau, Germany),
Lebesgue motivic invariants

11:10 - 11:40 : T. Servi (Pise, Italy),
Lebesgue integration of oscillating and subanalytic functions

11:50 - 12:20 : I. Itenberg (Paris 6),
Real Hurwitz numbers

12 :30 LUNCH AND FREE TIME

15:45 - 16:45 : J. Fernando (Madrid, Spain),
Survey : On polynomials, regular and Nash images of euclidean spaces.

16:45 - 17:15 CAFE

17:15 - 17:45 : H. Schoutens (CUNY, NY USA)
O-minimalism : first order properties of o-minimal theories

17:55 - 18:25 : Z. Izhakian (Bar Ilan Univ., Israel)
Supertropical algebra and representations

18:35 - 19:05 : F. Acquistapace (Pise, Italy),
A class of globally defined semianalytic sets
(Joint work with F. Broglia and J. Fernando)

DINNER : BOUILLABAISSE

Friday 16 - Positive Polynomials and Optimisation

9 - 10 : D. Plaumann (Konstanz, Germany),
Survey : Positive polynomials according to Murray Marshall

10-10:30 CAFE

10:30 - 11 : G. Blekherman (Georgia Tech., USA),
Degree Bounds in Rational Sums of Squares Representations on Varieties

11:10 - 11:40 : T. Netzer (Leipzig, Germany),
Proving Kazhdan's Property (T) with sums of squares techniques.

11:50 - 12:20 : B. Reznick (Urbana, USA),
Ternary forms with lots of zeros

12:30 LUNCH

14:30 - 15:30 : K. Schmuedgen (Leipzig, Germany),
Survey : The truncated moment problem and positive polynomials

15:30 - 16 CAFE

16 - 16 :30 : R. Sinn (Georgia Tech., USA)
Gram Spectrahedra
(joint work with D. Plaumann and C. Vinzant)

16 :40 – 17 :10 : M. Schweighofer (Konstanz, Germany),
Inclusion of spectrahedra, free spectrahedra and coin tossing
(joint work with Bill Helton, Igor Klep and Scott McCullough)

17 :20 – 17 :50 : C. Scheiderer (Konstanz, Germany),
Extremal nonnegative forms