

Workshop II: Tools from Algebraic Geometry

Monday April 7, 2014

- 8:00–8:55 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:55–9:00 *Welcome and Opening Remarks*
- 9:00–9:50 **Michel Coste** (Université de Rennes I)
Semialgebraic and o-minimal geometry : the method of ideal points.
- 10:00–10:30 *Break*
- 10:30–11:20 **Micha Sharir** (Tel Aviv University)
Algebraic techniques for incidence problems: Consumer demand
- 11:30–12:20 **Jozsef Solymosi** (University of British Columbia)
Extremal problems for linear k -uniform hypergraphs
- 12:30–2:00 *Lunch (on your own)*
- 2:00–2:50 **Joshua Zahl** (Massachusetts Institute of Technology)
Multi-level partitioning theorems
- 3:00–3:30 *Break*
- 3:30–4:20 **Alex Iosevich** (University of Rochester)
Group actions and geometric combinatorics in vector spaces over finite fields
- 4:30–6:00 *Poster Session & Reception (Hosted by IPAM)*

Tuesday April 8, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Bernd Sturmfels** (University of California, Berkeley (UC Berkeley))
The Euclidean Distance Degree
- 10:00–10:30 *Break*

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- 10:30–11:20 **Zuzana Safernova** (Charles University, Prague)
On the non-existence of k -reptile simplices in \mathbb{R}^3 and \mathbb{R}^4
- 11:30–12:20 **Joseph Landsberg** (Texas A&M University - College Station)
Hilbert functions and geometric complexity theory
- 12:30–2:00 *Lunch (on your own)*
- 2:00–2:50 **Ravi Vakil** (Stanford University)
Using discrete ideas in algebraic geometry
- 3:00–3:30 *Break*
- 3:30–4:20 **Erwan Brugallé** (École Polytechnique)
Enumeration of real curves interpolating a configuration of points
- 4:30–5:20 **Jordan Ellenberg** (University of Wisconsin-Madison)
Unusual varieties in characteristic 0 and characteristic p

Wednesday April 9, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Steven Kleiman** (Massachusetts Institute of Technology)
Extraordinary Hypersurfaces in Positive Characteristic
- 10:00–10:30 *Break*
- 10:30–11:20 **Nicolai Vorobjov** (University of Bath)
Approximation of definable sets by compact families
- 11:30–12:20 **Martin Sombra** (ICREA and Universitat de Barcelona)
Bounds for the Hilbert function of polynomial ideals
- 12:30–2:00 *Lunch (on your own)*
- 2:00–2:50 **Cordian Riener** (Aalto University)
Bounds on equivariant Betti numbers for symmetric semi algebraic sets
- 3:00–3:30 *Break*
- 3:30–5:20 *Problem & Discussion Session*

Thursday April 10, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Andrei Gabrielov** (Purdue University)
Triangulation of monotone families of compact sets
- 10:00–10:30 *Break*
- 10:30–11:20 **Daniel Perrucci** (University of Buenos Aires)
A symbolic approach to polynomial optimization over basic closed semialgebraic sets
- 11:30–12:20 **Ragni Piene** (University of Oslo)
Higher order osculating spaces and dual varieties of toric embeddings
- 12:30–2:00 *Lunch (on your own)*
- 2:00–2:50 **Sal Barone** (Georgia Institute of Technology)
Refined Bound on the Higher Betti Numbers of Sign Conditions
- 3:00–3:30 *Break*
- 3:30–4:20 **Emmanuel Briand** (University of Sevilla)
Invariant Theory and classification problems
- 4:30–5:20 **Ke Ye** (University of Chicago)
Geometry of matrix decomposition

Friday April 11, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Marie-Francoise Roy** (Université de Rennes I)
Using infinitesimals for algorithms in real algebraic geometry
- 10:00–10:30 *Break*
- 10:30–11:20 **Cynthia Vinzant** (University of Michigan)
Symmetroids and quartic spectrahedra
- 11:30–12:20 **Terence Tao** (University of California, Los Angeles (UCLA))
The Lang-Weil inequality and the étale fundamental group
- 12:30–2:00 *Lunch (on your own)*
- 2:00–2:50 **Kristian Ranestad** (University of Oslo)
Apolarity and decompositions of homogeneous forms
- 3:00–3:30 *Break*

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- 3:30–4:20 **Abdelmalek Abdesselam** (University of Virginia)
Chromatic properties of graphs and the Waring problem for homogeneous polynomials
- 4:30–5:20 **Saugata Basu** (Purdue University)
Montone maps in o-minimal geometry

