

## Workshop IV: Finding Algebraic Structures in Extremal Combinatorial Configurations

### Monday May 19, 2014

- 8:00–8:55 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:55–9:00 *Welcome and Opening Remarks*
- 9:00–9:50 **Shachar Lovett** (University of California, San Diego (UCSD))  
*The Freiman-Ruzsa Theorem in Finite Fields*
- 10:00–10:30 *Break*
- 10:30–11:20 **Jose Voloch** (University of Texas at Austin)  
*Arcs and caps in projective spaces over finite fields*
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:20 **Frank de Zeeuw** (École Polytechnique Fédérale de Lausanne (EPFL))  
*Polynomials on products*
- 2:30–2:45 *Break*
- 2:45–3:35 **Nathan Kaplan** (Yale University)  
*Arcs in the Projective Plane*
- 3:45–4:00 *Break*
- 4:30–5:30 **Avi Wigderson** (Institute for Advanced Study)  
*Public Lecture: Randomness and Pseudorandomness*
- 5:30–7:00 *Reception (Location: IPAM Lobby)*

### Tuesday May 20, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Shubhangi Saraf** (Rutgers University New Brunswick/Piscataway)  
*Incidence geometry and applications to theoretical computer science*
- 10:00–10:30 *Break*

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- 10:30–11:20 **Zeev Dvir** (Princeton University)  
*Breaking the quadratic barrier for 3 query LCCs over the reals*
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:20 **Avi Wigderson** (Institute for Advanced Study)  
*Research Lecture: Permanent & Determinant: Non-identical Twins*
- 2:30–3:00 *Break*
- 3:00–3:50 **Eriko Hironaka** (Florida State University)  
*Braid monodromy of line arrangements and generalized lantern relations*
- 4:00–4:15 *Break*
- 4:15–5:05 **Miguel Walsh** (University of Oxford)  
*The algebraicity of sieved sets and rational points on curves*

### Wednesday May 21, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Avi Wigderson** (Institute for Advanced Study)  
*Matrix Rank - Extensions, Applications and Open Problems*
- 10:00–10:30 *Break*
- 10:30–11:20 **Tali Kaufman** (Bar-Ilan University)  
*Bounded degree high dimensional expanders*
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:20 **Marton Hablicsek** (University of Wisconsin-Madison)  
*Keakeya problem over non-archimedean rings*
- 2:30–2:45 *Break*
- 2:45–3:35 **Joseph Silverman** (Brown University)  
*Extremal Configurations in Arithmetic Dynamics*
- 3:45–4:00 *Break*
- 4:00–5:00 *Poster Session*

## Thursday May 22, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Maryanthe Malliaris** (University of Chicago)  
*Comparing the complexity of unstable theories*
- 10:00–10:30 *Break*
- 10:30–11:20 **Herbert Edelsbrunner** (Institute of Science and Technology Austria (IST Austria))  
*The Morse theory of Čech & Delaunay complexes*
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:20 **Michael Bateman** (University of Cambridge)  
*Inverse 2D Kakeya theorems*
- 2:30–2:45 *Break*
- 2:45–3:35 **Aart Blokhuis** (Technische Universiteit Eindhoven)  
*Blocking Sets and Covers, variations of the Kakeya problem*
- 3:45–4:00 *Break*
- 4:00–4:50 **Noam Elkies** (Harvard University)  
*Variations on a theme of Sylvester*
- 5:00–5:15 *Break*
- 5:15–6:05 **Joshua Zahl** (Massachusetts Institute of Technology)  
*Space Curve Arrangements with Many Incidences*

## Friday May 23, 2014

- 8:00–9:00 *Check-in/Breakfast (hosted by IPAM)*
- 9:00–9:50 **Boris Bukh** (Carnegie-Mellon University)  
*Algebraic constructions of  $K_{\{s,t\}}$ -free graphs*
- 10:00–10:30 *Break*
- 10:30–11:20 **Ernest Croot** (Georgia Institute of Technology)
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:20 **Simeon Ball** (Polytechnical University of Catalunya (Barcelona))  
*Segre's theorem and the MDS conjecture*
- 2:30–2:45 *Break*

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2:45–3:35 **Ilya Shkredov** (Steklov Mathematical Institute)  
*The additive energy and the eigenvalues*

3:45–4:00 *Break*

4:00–4:50 **Harald Helfgott** (Centre National de la Recherche Scientifique (CNRS))  
*Random generators of the symmetric group: diameter, mixing time and spectral gap*

