

Workshop IV: Analytical Methods in Combinatorics, Additive Number Theory and Computer Science

Tuesday December 1, 2009

- 8:00–8:50 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:50–9:00 *Welcome and Opening Remarks*
- 9:00–9:50 **Jean Bourgain** (Institute for Advanced Study)
On dimensional extractors and expanders
- 10:00–10:15 *Break*
- 10:15–11:05 **Derrick Hart** (Rutgers University)
Point configurations in discrete and continuous settings
- 11:15–11:30 *Break*
- 11:30–12:20 **Nets Katz** (Indiana University)
Algebraic methods in discrete analogs of the Kakeya problem
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:20 **Alex Samorodnitsky** (Hebrew University)
Edge-isoperimetric inequalities on the Hamming cube
- 3:30–3:45 *Break*
- 3:45–4:35 **Hoi Nguyen** (Rutgers University)
An optimal version of the inverse Littlewood-Offord theorem
- 4:45–6:45 *Reception and Poster Session (Hosted by IPAM)*

Wednesday December 2, 2009

- 8:00–9:00 *Continental Breakfast*
- 9:00–9:50 **Avi Wigderson** (Institute for Advanced Study)
Direct product testing, parallel repetition and foams
- 10:00–10:15 *Break*
- 10:15–11:05 **Shachar Lovett** (Weizmann Institute of Science)
Polynomial Threshold Functions: Structure, Approximation and Pseudorandomness
- 11:15–11:30 *Break*

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- 11:30–12:20 **Tom Sanders** (University of Cambridge)
An ultra weak Freiman-type theorem and the non-abelian idempotent theorem
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:20 **Madhu Sudan** (Microsoft Research New England)
The Role of Invariance in Property Testing
- 3:30–3:45 *Break*
- 3:45–4:35 **Julia Wolf** (Rutgers University)
Interpreting polynomial structure analytically

Thursday December 3, 2009

- 8:00–9:00 *Continental Breakfast*
- 9:00–9:50 **Ben Green** (University of Cambridge)
An inverse theorem for the Gowers U^4 norm
- 10:00–10:15 *Break*
- 10:15–11:05 **Trevor Wooley** (University of Bristol)
The additive theory of exceptional sets =====
- 11:15–11:30 *Break*
- 11:30–12:20 **Ernest Croot** (Georgia Institute of Technology)
Some new results on sum-product inequalities, and a new method for attacking certain additive problems
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:20 **Subhash Khot** (New York University)
SDP Integrality Gaps with Local L_1 -Embeddability
- 3:30–3:45 *Break*
- 3:45–4:35 **Hamed Hatami** (McGill University)
Friedgut's theorem for the continuous cube

Friday December 4, 2009

- 8:00–9:00 *Continental Breakfast*
- 9:00–9:50 **Assaf Naor** (New York University)
 L_1 embeddings of the Heisenberg group and the Sparsest Cut problem
- 10:00–10:15 *Break*

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10:15–11:05 **Luca Trevisan** (University of California, Berkeley (UC Berkeley))
Indistinguishability in Additive Combinatorics and Computer Science

11:15–11:30 *Break*

11:30–12:20 **Terence Tao** (University of California, Los Angeles (UCLA))
Non-commutative Freiman theorems and model theory

