Expanders in Pure and Applied Mathematics

Monday February 11, 2008

8:00–8:45 *Check-In/Light Breakfast (Hosted by IPAM)*

8:45–9:00 *Welcome and Opening Remarks*

9:00–10:00 **Avi Wigderson** (Institute for Advanced Study)
Expander: old and new applications and problems

10:00–10:30 *Break*

10:30–11:30 **Benjamin Sudakov** (University of California, Los Angeles (UCLA))
Cycles and cliques minors in expanders

11:30–1:00 *Lunch (on your own)*

1:00–2:00 **Omer Reingold** (Weizmann Institute of Science)
Expander Graphs: the Unbalanced Case

2:00–2:30 *Break*

2:30–3:30 **Martin Kassabov** (Cornell University)
Property Tau and pro-finite completions

3:30–4:00 *Break*

4:00–5:00 *Problem Session*

5:00–6:30 *Reception (Location: IPAM Lobby)*

Tuesday February 12, 2008

8:00–9:00 *Continental Breakfast*

9:00–10:00
TBA

10:00–10:30 *Break*

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10:30–11:00 **Anup Rao** (Institute for Advanced Study)
Extractors for Low-Weight Affine Sources

11:00–11:30 **Kristin Lauter** (Microsoft Research)
*Applications of Ramanujan graphs in Cryptography
Hash of the Future?*

11:30–1:00 *Lunch (on your own)*

1:00–2:00 **Fan Chung Graham** (University of California, San Diego (UCSD))
The Cheeger inequalities and graph partition algorithms

2:00–2:30 *Break*

2:30–3:00 **Ouziel Hadad** (Hebrew University)
Uniform Kazhdan Constant for some families of linear groups

3:00–3:30 **Audrey Terras** (University of California, San Diego (UCSD))
What is the Riemann Hypothesis for Zeta Functions of Irregular Graphs?

3:30–4:00 *Break*

4:00–5:00 **Harald Helfgott** (University of Bristol)
Growth in linear algebraic groups: an approach through incidence

Wednesday February 13, 2008

8:00–9:00 *Continental Breakfast*

9:00–10:00 **Van Vu** (Rutgers University)
Sum-product estimates via directed expanders

10:00–10:30 *Break*

10:30–11:00 **Ramarathnam Venkatesan** (Microsoft Research)
Cryptographic applications involving Spectral gap

11:00–11:30 **Motoko Kotani** (Tohoku University)
Geometric aspect of random walks on a crystal lattice

11:30–1:00 *Lunch (on your own)*

1:00–2:00 **Nathan (Nati) Linial** (Hebrew University)
Word maps and spectra of random graph lifts

2:00–2:30 *Break*

2:30–3:30 **Jean Bourgain** (Institute for Advanced Study)
On random walks and expansion in SL^d(q)

3:30–4:00 *Break*

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4:00–5:00 **Alan Reid** (University of Texas at Austin)
Property \tau and hyperbolic 3-manifolds

Thursday February 14, 2008

8:00–9:00 *Continental Breakfast*

9:00–10:00 **Terence Tao** (University of California, Los Angeles (UCLA))
Kleiner's proof of Gromov's theorem

10:00–10:30 *Break*

10:30–11:30 **Marc Lackenby** (University of Oxford)
The spectral geometry of hyperbolic link complements

11:30–1:00 *Lunch (on your own)*

1:00–12:00 *In Memory of Beth Samuels - "Ramanujan complexes and their applications"*

1:00–2:00 **Wen-Ching Li** (Pennsylvania State University)

2:00–2:30 *Break*

2:30–3:00 **Uzi Vishne** (Bar-Ilan University)

3:00–3:30 **Cristina Ballantine** (College of the Holy Cross)
Biregular expanders and the Ramanujan Conjecture

3:30–4:00 *Break*

4:00–4:30 **Roy Meshulam** (Technion - Israel Institute of Technology)
Moore's bound and Ramanujan complexes

4:30–5:00 **Alexander Lubotzky** (The Hebrew University of Jerusalem)
Ramanujan complexes and finite groups of Lie tupe as expanders

Friday February 15, 2008

8:00–9:00 *Continental Breakfast*

9:00–10:00 **Yehuda Shalom** (Tel Aviv University)
Common coverings of infinite graphs: a spectral extension of Leighton's theorem

10:00–10:30 *Break*

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10:30–11:30 **Joel Friedman** (University of British Columbia)
Nonbacktracking spectrum and surprises in non-regular graphs

11:30–1:00 *Lunch (on your own)*

1:00–2:00 **Luca Trevisan** (University of California, Berkeley (UC Berkeley))
Certifying the quasirandomness of hypergraphs

2:00–2:30 *Break*

2:30–3:00 **Oren Dinai** (Hebrew University)
Some uniform expansion properties of SL_2 over finite fields

3:00–3:30 **Mikhail Ershov** (University of Virginia)
Golod-Shafarevich groups with property (T) and Kac-Moody groups

3:30–4:00 *Break*

4:00–5:00 *Problem Session*