



VICTOR ROTHSCHILD MEMORIAL SYMPOSIA
THE ISRAEL INSTITUTE FOR ADVANCED STUDIES
AT
THE HEBREW UNIVERSITY OF JERUSALEM

THE 17TH MIDRASHA MATHEMATICAE ON:
**L-FUNCTIONS, SPECTRA and
EQUIDISTRIBUTION**

December 11-19, 2013

General Director: Peter Sarnak (Princeton University)
Organizers: Erez Lapid (The Hebrew University and Weizmann
Institute)
Elon Lindenstrauss (The Hebrew University)
Jonathan Pila (University of Oxford)
Zeev Rudnik (Tel Aviv University)

(All lectures will take place at the Feldman Building, on the Edmond J. Safra,
Givat Ram Campus, unless otherwise stated)

PROGRAM

Wednesday, December 11

- 9:00-9:30 Registration
- 9:30-10:30 **Alexander Gamburd** (CUNY Graduate Center and IAS)
Expander Graphs, Thin Groups and Superstrong Approximation I
- 10:30-11:00 Coffee break
- 11:00-12:00 **Umberto Zannier** (Scuola Normale Superiore di Pisa)
The Subspace Theorem of Schmidt and Certain of its Applications I
- 12:00-14:00 Lunch
- 14:00-15:00 **Peter Sarnak** (Princeton University, IAS Princeton and IAS)
High-Frequency Maass Forms on the Modular Surface I
- 15:00-15:30 Coffee break
- 15:30-16:30 **Elon Lindenstrauss** (The Hebrew University)
Diagonalizable Actions and Number Theory I

Thursday, December 12

- 9:00-10:00 **Alexander Gamburd** (CUNY Graduate Center and IAS)
Expander Graphs, Thin Groups and Superstrong Approximation II
- 10:00-10:15 Coffee break
- 10:15-11:15 **Umberto Zannier** (Scuola Normale Superiore di Pisa)
The Subspace Theorem of Schmidt and Certain of its Applications II
- 11:15-11:30 Break
- 11:30-12:30 **Peter Sarnak** (Princeton University, IAS Princeton and IAS)
High-Frequency Maass Forms on the Modular Surface II
- 12:30-14:30 Lunch
- 14:30-15:30 **Jean Bourgain** (IAS Princeton)
Colloquium at the Math Department (Hall 2)
Toral Eigenfunctions and their Nodal Sets
- 15:30-16:00 Coffee break
- 16:00-17:00 **Elon Lindenstrauss** (The Hebrew University)
(at Math Dept., Hall 2)
Diagonalizable Actions and Number Theory II

Sunday, December 15

- 9:00-9:30 Registration
- 9:30-10:30 **Jonathan Pila** (University of Oxford)
Arithmetic and Functional Transcendence around Schanuel's Conjecture
- 10:30-11:00 Coffee break
- 11:00-12:00 **Tobias Finis** (Freie Universität Berlin)
Congruence Subgroups of Arithmetic Lattices and the Limit Multiplicity Property
- 12:00-14:00 Lunch
- 14:00-15:00 **Peter Varju** (University of Cambridge)
Spectral Gap Estimates for Random Walks
- 15:00-15:15 Break
- 15:15-15:45 **Doron Puder** (The Hebrew University)
Expansion of Random Graphs: New Proofs, New Results
- 15:45-16:15 Coffee break
- 16:15-17:15 **Jean Bourgain** (IAS Princeton)
Binary Aspects of the Möbius Function and the Primes
- 18:00 Reception

Monday, December 16

- 9:30-10:30 **Jacob Tsimerman** (Harvard University)
Special Divisors on Hyperelliptic Curves
- 10:30-11:00 Coffee break
- 11:00-12:00 **Andre Reznikov** (Bar-Ilan University)
Adelic Action on Automorphic Periods and Special Values of L-Functions
- 12:00-14:00 Lunch
- 14:00-15:00 **Nicolas Templier** (Princeton University)
Singularities and Large Values of Automorphic Forms
- 15:00-15:15 Break
- 15:15-15:45 **Junhyuk Jung** (KAIST Daejeon)
Nodal Domains and Eigenfunctions of Negatively Curved Surfaces
- 15:45-16:15 Coffee break
- 16:15-17:15 **Wee Teck Gan** (National University of Singapore)
Twisted Bhargava's Cubes

Tuesday, December 17

- 9:30-10:30 **Emmanuel Kowalski** (ETH Zurich)
Analytic Number Theory over Finite Fields
- 10:30-11:00 Coffee break
- 11:00-12:00 **Paul Nelson** (École Polytechnique Fédérale de Lausanne)
Subconvex Bounds for Rankin-Selberg L-Functions
- 12:00-14:00 Lunch
- 14:00-15:00 **Xiaoqing Li** (University of Buffalo)
 L^2 Restrictions of Maass Forms
- 15:00-15:15 Break
- 15:15-15:45 **Alexei Entin** (Tel Aviv University)
On the Bateman-Horn Conjecture for Polynomials over Large Finite Fields
- 15:45-16:15 Coffee break
- 16:15-17:15 **Alex Kontorovich** (Yale University and IAS Princeton)
Affine Sieve Level

Wednesday, December 18

- 9:30-10:30 **Kannan Soundararajan** (Stanford University)
Recent Progress on Gaps between Primes I
- 10:30-11:00 Coffee break
- 11:00-12:00 **Philippe Michel** (École Polytechnique Fédéral de Lausanne)
On the Analytic Theory of Frobenius Trace Functions
- 12:00-14:00 Lunch
- 14:00-15:00 **Nicolas Bergeron** (Université Pierre-et-Marie-Curie, Paris VI)
Torsion Homology Growth and Cycle Complexity of Arithmetic Manifolds
- 15:00-15:15 Break
- 15:15-15:45 **Stephen Lester** (Tel Aviv University)
Zeros of the Derivative of the Riemann Zeta-Function
- 15:45-16:15 Coffee break
- 16:15-17:15 **Igor Wigman** (King's College London)
On the Nodal Sets of Random Band Limited Functions
- 19:30 Dinner

Thursday, December 19

- 9:30-10:30 **Kannan Soundararajan** (Stanford University)
Recent Progress on Gaps between Primes II
- 10:30-11:00 Coffee break
- 11:00-12:00 **Wenzhi Luo** (Ohio State University)
A Refined Non-vanishing Theorem for the Central L-Values
- 12:00-14:00 Lunch
- 14:00-15:00 **Emmanuel Breuillard** (Université Paris-Sud, Paris XI)
Height Gap versus Spectral Gap
- 15:00-15:15 Break
- 15:15-15:45 **Anders Södergren** (University of Copenhagen)
Low-lying Zeros of Elliptic Curve L-Functions
- 15:45-16:15 Coffee break
- 16:15-17:15 **Alex Lubotzky** (The Hebrew University)
From Ramanujan Graphs to Ramanujan Complexes

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