

Third Annual PRIMES Conference, May 18-19, 2013

Room 4-237, MIT

Open to the public

Saturday, May 18

Section I. Mathematics

9:00 am Welcoming Remarks

Prof. Michael Sipser, Head of the MIT Mathematics Department

Prof. Pavel Etingof, PRIMES Chief Research Advisor

Dr. Slava Gerovitch, PRIMES Program Director

9:15 am Session 1

Jonathan Tidor, *Extremal functions of pattern avoidance in matrices* (mentor Jesse Geneson)

Rohil Prasad, *Investigating GCD in Euclidean domains* (mentor Dr. Tanya Khovanova)

Kavish Gandhi and Noah Golowich, *Inequalities and partition regularity of linear homogenous equations* (mentor Laszlo Lovasz)

10:35 am Session 2

Jin-Woo Bryan Oh, *Towards generalizing thrackles to arbitrary graphs* (mentor Rik Sengupta)

Raj Raina, *Minimal Ramsey graphs* (mentor Andrey Grinshpun)

Junho Won, *Highly non-convex graph crossing sequences* (mentor Chiheon Kim)

11:50 am Session 3

Leigh Marie Braswell, *The Cookie Monster Problem* (mentor Dr. Tanya Khovanova)

Saarik Kalia and Michael Zanger-Tishler, *Good functions and multivariate polynomials* (mentor Tue Ly)

2:00 pm Session 4

Ying Gao, *Depths of posets ordered by refinement* (mentor Sergei Bernstein)

Vahid Fazel-Rezai, *Equivalence classes of length-changing replacements of size-3 patterns* (mentor Dr. Tanya Khovanova)

William Kuszmaul, *On q-enumeration of modular statistics* (mentor Darij Grinberg)

3:15 pm Session 5

Gabriella Studt, *Higher Bruhat order on Weyl groups of Type B* (mentor Daniel Thompson)

Ravi Jagadeesan, *Belyi functions with prescribed monodromy* (mentor Akhil Mathew)

Ritesh Ragavender, *q-analogues of symmetric polynomials and nilHecke algebras* (mentor Alex Ellis)

4:30 pm Session 6

Jeffrey Cai, *Orbits of the symplectic group on partial flag varieties of type A* (mentor Vinoth Nandakumar)

Isaac Xia, *Quotients of lower central series over Z with multiple relations* (mentor Yael Fregier)

Sunday, May 20

Section II. Computer Science

9:00 am Welcoming Remarks

Prof. Srinivasa Devadas, Department of Electrical Engineering and Computer Science

Dr. Slava Gerovitch, PRIMES Program Director

9:15 am Session 7

William Wu and Nicolaas Kaashoek, *How to teach a class to grade itself* (mentors Christos Tzamos and Matt Weinberg)

Anish Athalye and Patrick Long, *Performance analysis and optimization of skip lists for modern multi-core architectures* (mentors Austin Clements and Stephen Tu)

Ajay Saini, *Modeling the opinion dynamics of a social network* (mentor Dr. Natasha Markuzon)

10:40 am Session 8

Istvan Chung and Nathan Wolfe, *A collaborative editor in Ur/Web* (mentor Benjamin Barenblat)

Alex Sekula and Oron Propp, *Automating interactive theorem-proving with Coq and Ltac* (mentor Drew Haven)

Nihal Gowravaram, *Avoidance in (2+2)-free posets* (mentor Wuttisak Trongsiwat)

12:05 pm Session 9

Steven Homborg, *Finding enrichments of functional annotations for disease-associated single-nucleotide polymorphisms* (mentor Dr. Luke Ward)

John Long, *Evidence of purifying selection in humans* (mentor Angela Yen)

2:00 pm Session 10

Dr. Gil Alterovitz, Harvard-MIT Division of Health Sciences and Technology, Introductory remarks

Ben Zheng, *Removing disorder in drug resistance-related proteins in tuberculosis through hill-climbing algorithms* (mentor Gil Alterovitz)

Peijin Zhang, *Leveraging disordered-ordered interactions to yield new targets and drugs for tuberculosis* (mentor Gil Alterovitz)

3:00 pm Session 11

Jonathan Patsenker, *Finding the binding sites of MoRFs on a partner protein* (mentor Gil Alterovitz)

Yishen Chen, *SMART Genomics API* (mentor Gil Alterovitz)

Section III. Computational and Physical Biology

3:50 pm Session 12

Prof. Leonid Mirny, Division of Health Sciences and Technology and Physics Department, Introductory remarks

Boryana Doyle, *Chromatin organization: from polymer loops to topological domains* (mentors Geoffrey Fudenberg and Maxim Imakaev)

Carolyn Lu, *Dynamic folding of chromatin domains by active SMC-mediated loops* (mentors Geoffrey Fudenberg and Maxim Imakaev)

4:50 pm Session 13

Ashwin Murali, *Lineage-dependent properties of 16S ribosomal RNA nucleotide composition* (mentors Geoffrey Fudenberg and Maxim Imakaev)

Hao Shen, *The impact of gene order on evolution* (mentor Anton Goloborodko)

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