2013 MIT-PRIMES CONFERENCE

Program for Research In Mathematics, Engineering, and Science
for High School Students

MIT Stata Center. Photo: bettlebrox/flickr

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

Kavish Gandhi and Noah Golowich, *Inequalities and partition regularity of linear homogenous equations*
Jonathan Tidor, *Extremal functions of pattern avoidance in matrices*
Rohil Prasad, *Investigating GCD in Euclidean domains*

10:35 am Session 2

Jin-Woo Bryan Oh, *Towards generalizing thrackles to arbitrary graphs*
Raj Raina, *Minimal Ramsey graphs*
Junho Won, *Highly non-convex graph crossing sequences*

11:50 am Session 3

Leigh Marie Braswell, *The Cookie Monster Problem*
Saarik Kalia and Michael Zanger-Tishler, *Good functions and multivariate polynomials*

2:00 pm Session 4

Ying Gao, *Depths of posets ordered by refinement*
Vahid Fazel-Rezai, *Equivalence classes of length-changing replacements of size-3 patterns*
William Kuszmaul, *On q-enumeration of modular statistics*

3:15 pm Session 5

Gabriella Studt, *Higher Bruhat order on Weyl groups of Type B*
Ravi Jagadeesan, *Belyi functions with prescribed monodromy*
Ritesh Ragavender, *q-analogues of symmetric polynomials and nilHecke algebras*

4:30 pm Session 6

Jeffrey Cai, *Orbits of the symplectic group on partial flag varieties of type A*
Isaac Xia, *Quotients of lower central series over Z with multiple relations*

Sunday, May 19

Section II. Computer Science

Room 4-237, MIT
web.mit.edu/primes

9:00 am Welcoming remarks

Prof. Srini Devadas, MIT 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*
Anish Athalye and Patrick Long, *Performance analysis and optimization of skip lists for modern multi-core architectures*
Ajay Saini, *Modeling the opinion dynamics of a dynamic social network*

10:40 am Session 8

Istvan Chung and Nathan Wolfe, *A collaborative editor in Ur/Web*
Alex Sekula and Oron Propp, *Automating interactive theorem-proving with Coq and Ltac*
Nihal Gowravaram, *Avoidance in (2+2)-free posets*

12:05 pm Session 9

Steven Homberg, *Finding enrichments of functional annotations for disease-associated single-nucleotide polymorphisms*
John Long, *Evidence of purifying selection in humans*

2:00 pm Session 10

Dr. Gil Alterovitz, Division of Health Sciences and Technology, Introductory remarks
Ben Zheng, *Removing disorder in drug resistance-related proteins in tuberculosis through hill-climbing algorithms*
Peijin Zhang, *Leveraging disordered-ordered interactions to yield new targets and drugs for tuberculosis*

3:00 pm Session 11

Jonathan Patsenker, *Finding the binding sites of MoRFs on a partner protein*
Yishen Chen, *SMART Genomics API*

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*
Carolyn Lu, *Dynamic folding of chromatin domains by active SMC-mediated loops*

4:50 pm Session 13

Ashwin Murali, *Lineage-dependent properties of 16S ribosomal RNA nucleotide composition*
Hao Shen, *The impact of gene order on evolution*

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