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. Srin 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 Trongsiriwat)

12:05 pm Session 9
Steven Homberg, 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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