Programme for Dagstuhl Seminar 22482

Counting and Sampling: Algorithms and Complexity

Monday 28th November

09:00–09:15 Introductions.

09:15–09:45 Amin Coja-Oghlan, TU Dortmund, *The random 2-SAT partition function.*

09:50–10:20 Heng Guo, University of Edinburgh, *Towards derandomising Markov chain Monte Carlo.*

10:20–10:55 Coffee break.

10:55–11:25 Jacob Focke, CISPA, Saarbrücken, *Counting small induced subgraphs with hereditary properties.*

11:30–12:00 Marc Roth, University of Oxford, *Counting small directed subgraphs, parameterised by the outdegree.*

12:15–15:30 Lunch, followed by free time for informal discussions.

15:30–16:00 Coffee break.

16:00–17:30 Open problems and prospects.

Tuesday 29th November

09:00–09:30 Andreas Björklund, Lund University, *The fine-grained complexity of computing the Tutte polynomial of a linear matroid.*

09:35–10:05 Marco Bressan, University of Milan, *Linear and sublinear algorithms for sampling graphlets in large graphs.*

10:05–10:55 Coffee break.

10:55–11:25 Sarah Cannon, Claremont McKenna College, *Fast and perfect sampling of subgraphs and polymer systems.*

11:30–12:00 Konrad Anand, Queen Mary, University of London, *Lazy depth-first sampling of spin systems.*

12:15–15:30 Lunch, followed by free time for informal discussions.

15:30–16:00 Coffee break.

16:00–16:30 Guus Regts, University of Amsterdam, *Approximating the chromatic polynomial is as hard as computing it exactly.*

16:35–17:05 Miriam Backens, University of Birmingham, *Holant clones and approximation of holant problems.*

17:10–17:40 Andrei Bulatov, Simon Fraser University, *Complexity classification of counting graph homomorphisms modulo a prime number.*

09:00–09:30 Leslie Ann Goldberg, University of Oxford, *Instability of contention resolution protocols.*

09:35–10:05 Andreas Göbel, Hasso-Plattner-Institut, Potsdam, *Analysis of the survival time of the SIRS process via expansion.*

10:05–10:55 Coffee break.

10:55-11:25 Viresh Patel, Queen Mary, University of London, *Sampling from the low temperature ferromagnetic Potts model via flows.*

11:30–12:00 Andreas Galanis, University of Oxford, *Metastability for the ferromagnetic Potts model.*

12:05–12:15 Photograph?

12:15–13:00 Lunch, followed by hike.

15:00–16:00 Coffee break.

09:00–09:30 Nima Anari, Stanford University, *Parallel discrete sampling via continuous walks.*

09:35–10:05 Petteri Kaski, Aalto University, *Trustworthy Monte Carlo*

10:05–10:55 Coffee break.

10:55–11:25 Sarah Miracle, University of St. Thomas, St. Paul, *Iterated decomposition of biased permutations via new bounds on the spectral gap of Markov chains.*

11:30–12:00 Marcus Pappik, Hasso-Plattner-Institut, Potsdam, *Discretization-based algorithms for repulsive Gibbs point processes.*

12:15–13:00 Lunch, followed by free time for informal discussions.

15:30–16:00 Coffee break.

16:00–16:30 John Lapinskas, University of Bristol, *Nearly optimal independence oracle algorithms for edge estimation in hypergraphs*

16:35–17:05 Radu Curticapean, University of Copenhagen, *Ohne Titel.*

17:10–17:40 Philip Wellnitz, MPI Saarbrücken, *Tight complexity bounds for counting generalized dominating sets in bounded-treewidth graphs.*

Friday 2nd December (Provisional)

09:00–09:30 Checkout, etc.

09:30–10:00 Mark Jerrum, Queen Mary, University of London, *Counting vertices of integral polytopes.*

10:00–10:40 Coffee break.

10:40–11:30 Reports from open problems groups.

12:15–13:00 Lunch.