Program, SMS höstmöte, 22 november 2024

Mötet äger rum i Umeå, MIT.A.356, i MIT-huset (Campus Umeå)

Titlar och sammanfattningar till föredragen finns på nästa sidor.

13.00–13.50	Fredrik Viklund *Presentation av vetenskapliga resultat av årets Wallenbergpristagare: Malin Palö Forsström*
14.00–14.50	Stephan Wagner *Presentation av vetenskapliga resultat av årets Wallenbergpristagare: Cecilia Holmgren*
14.50	Utdelning av Wallenbergpriset
14.55–15.20	Kaffepaus
15.20–15.40	Signe Lundqvist
15.45–16.05	Björn Wehlin
16.10-16.30	Aron Persson
16.40–17.00	Eduard Vilalta Vila
17.05–17.25	Jacob Lundblad
17.40–18.10	Medlemsmöte Dagordning finns i separat dokument
19.00	Middag, restaurang 1897, Kungsgatan 75

Anmäl senast den 15 november till Lyudmyla Turowska
per e-post turowska@chalmers.se om du vill deltaga i middagen och eventuella kostrestriktioner.

Jacob Lundblad (Uppsala University)

Finding the expected number of leaves in a random recursive tree

In combinatorics, a recursive tree is an unordered, labelled, rooted tree where the vertices are labelled 1,...,n in a strictly increasing way. A recursive tree chosen uniformly at random can also be constructed using a simple stochastic process, making them suitable for modelling various different phenomena. In this presentation, we compute the expected number of leaves of such a random tree of a given size. To do this, we use the exponential generating function counting the number of trees of that particular size and extend it to count leaves as well.

Signe Lundqvist (Umeå University)

Symmetric realisations of hypergraphs and projective motions

Projective motions are motions of configurations of points and straight lines in the projective plane that preserve the incidences between points and lines. This talk will focus on symmetric configurations of points and lines. Given symmetric configurations of points and lines, we can consider their symmetry-preserving projective motions. The symmetry-preserving motions provide information about whether symmetry, in some sense, is necessary to construct a particular configuration of points and lines.

Aron Persson (Uppsala University)

On Parameter Estimation for normal random variables based on projected data into S2

We consider the projected normal distribution, with isotropic variance, on the 2-sphere using intrinsic statistics. We show that in this case, the expectation commutes with the projection and that the covariance of the normal variable has a 1-1 correspondence with the intrinsic covariance of the projected normal distribution. This allows to estimate, after model identification, the parameters of the underlying normal distribution that generates the data.

Eduard Vilalta Vila (Chalmers and University of Gothenburg)

Gabor frames, twisted group C-algebras and the Toms-Winter conjecture*

Abstract: The Toms-Winter conjecture has been a driving force behind many of the recent advances in the theory of C*-algebras. In this talk, I will

explain an intriguing relation between the (simple and non-simple version of this) conjecture and the existence of Schwartz Gabor frames over certain lattices.

The talk is based on three different projects, joint with Enstad; Enstad-Thiel; and Antoine-Perera-Thiel respectively.

Björn Wehlin (KTH)

Topological Data Analysis: Seeing Geometry Through Noise

I will give a brief introduction Topological Data Analysis (TDA) (with plenty of pictures!). In particular, I will show how the machinery of persistent homology and vectorizations turns geometric data into topological feature descriptors that can serve as input to, e.g., machine learning. One of the promises of persistent homology is its inherent denoising properties that can be expressed in terms of Lipschitz stability. We will see this in action for noisy datasets. Time permitting, I will also talk about some of the computational challenges that arise from the application of TDA on big data. The talk is intended for a broad audience in mathematics and data science.