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Introduction to max-linear models and tropical linear algebra

Abstract: Motivated by extreme value theory, max-linear graphical models have been recently introduced and studied as an alternative to classical linear structural equation models. Instead of having Gaussian or discrete random variables as nodes in the graph, an important feature of max-linear models is that they support heavy-tailed innovations. In this talk I will give the basic definitions to understand and present max-linear models naturally in the framework of tropical linear algebra, hinting how this can help with the problem of studying conditional independence relations.

This talk is based on joint work with Claudia Klüppelberg, Steffen Lauritzen and Ngoc Tran.

References:

[1] N. Gissibl and C. Klüppelberg. Max-linear models on directed acyclic graphs. (2018). *Bernoulli*, 24(4A): 2693–2720.

[2] N. Gissibl, C. Klüppelberg and M. Otto. Tail dependence of recursive max-linearmodels with regularly varying noise variables. (2018). *Econometrics and Statistics*, 6: 149–167.