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The Geometry of Gaussian Graphical Models with Symmetries

Gaussian graphical models are widely used in applications to encode conditional independence relations. To use algebraic geometry more effectively, we identify these models with their parameter spaces of covariance matrices. Their geometry is, however, complex, and it becomes computationally infeasible to study when the number of nodes is large and the graph is not a block graph. One way to make these models more tractable is to impose additional symmetries on the entries of the precision or covariance matrix. These symmetries can be represented by coloring the edges and nodes of the graph, giving rise to colored Gaussian graphical models.

We will discuss which colorings of the graph give models with “good” geometry, as well as the implications for the maximum likelihood degree and maximum likelihood threshold. The talk is based on <https://arxiv.org/abs/2412.00895>, <https://arxiv.org/pdf/2402.10322>, <https://arxiv.org/abs/2111.14817>, and ongoing work.

Das Kolloquium wird von Prof. Dr. Oliver Ernst und Prof. Dr. Christian Sevenheck geleitet.

Zeit: Donnerstag, 29.10.2026, 16:00 Uhr
Ort: Reichenhainer Str. 90
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