Otto-von-Guericke-Universität Magdeburg Fakultät für Mathematik

Auf Einladung des Institutes für Algebra und Geometrie spricht

## Dr. Ben Hollering (MPI Leipzig)

über das Thema

## Toric Ideals of Characteristic Imsets via Quasi-Independence Gluing

**Zeit:** Dienstag, 18. April 2023, 13.00 Uhr, G03-214 oder per Zoom Meeting ID 971 4945 5855, passcode 490213

Zu diesem Vortrag laden wir alle Interessierten herzlich ein.

Prof. Dr. Thomas Kahle

Abstract: For any directed acyclic graph D, its characteristic imset (CIM) is a 0-1 vector which uniquely encodes the Markov equivalence class of D. To any undirected graph G, the associated characteristic imset polytope CIM(G) is the convex hull of the CIM of each DAG with skeleton G. It was recently shown that many causal discovery algorithms can be viewed as an edge walk on CIM(G). This has led to greater interest in these polytopes and their combinatorial structure. In this talk, we will instead study the toric ideals which are naturally associated to this polytope. In particular we show that when G is a tree, the toric ideal of CIM(G) has a squarefree reduced Grobner basis which can be obtained via a new operation we call quasi-independence gluing.