Otto-von-Guericke-Universität Magdeburg
Fakultät für Mathematik

Auf Einladung des Institutes für Algebra und Geometrie spricht

Frau Jane Coons

(North Carolina State University)

über das Thema

Toric Geometry of the Cavender-Farris-Neyman Model with a Molecular Clock

Zoom-Koordinaten: https://ovgu.zoom.us/j/95199662620
Meeting ID: 951 9966 2620 / Passcode: 461614

Zeit: Dienstag, 12. Januar 2021, 14.00 Uhr

Zu diesem Vortrag laden wir alle Interessierten herzlich ein.

Prof. Dr. Thomas Kahle

Abstract: Many important models in phylogenetics can be viewed as toric varieties after a linear change of coordinates. This allows us to use combinatorial techniques to analyze these phylogenetic models. In this talk, we will discuss recent work with Seth Sullivant on the toric ideal of phylogenetic invariants of the Cavender-Farris-Neyman model with a molecular clock along a rooted binary phylogenetic tree. We give both vertex and facet descriptions of the polytope associated to this toric ideal, and show that the ideal has a Groebner basis consisting of quadratic binomials with squarefree leading terms. We also compute the degree and Hilbert series of the associated variety using the Ehrhart theory of the underlying polytope. This polytope is affinely isomorphic to the order polytope of the zig-zag poset; so we give a family of shellings for the canonical triangulation of this order polytope in order to give a combinatorial interpretation for its h*-polynomial.