Otto-von-Guericke-Universität Magdeburg
Fakultät für Mathematik

Auf Einladung des Institutes für Algebra und Geometrie spricht

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über das Thema

Toric variety bundles and their applications

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Zu diesem Vortrag laden wir alle Interessierten herzlich ein.

Prof. Dr. Milena Wrobel

Abstract: Toric variety bundles are fibrations whose fiber is a toric variety; more concretely, they are equivariant (partial) compactifications of principal torus bundles. They arise naturally in spherical geometry as toroidal horospherical varieties, and in logarithmic Gromov-Witten theory as irreducible components of logarithmic expansions.
In this talk, I will report on recent developments concerning toric variety bundles. I will first give a combinatorial description of these objects, then give combinatorial descriptions of their intersection theory and of the positivity conditions satisfied by divisors on them. I will conclude with an application of this theory: I will show that the integral of a Lorentzian polynomial over a Minkowski linear combination of convex bodies in the positive orthant is itself a Lorentzian polynomial. As a corollary, we obtain an analogue of the Alexandrov-Fenchel inequalities for such mixed integrals. If time permits, I will also present a similar application to discrete valuations: Stanley's non-negativity for certain classes of weighted Ehrhart series.