

## **Spectrahedra and Real Determinantal Representations**

A spectrahedron is a linear slice of the cone of real positive semi-definite matrices. The problem of realizing a given convex set as a spectrahedron is closely related to the determinantal representations of the hypersurface containing its boundary, in particular reality and positivity of such representations. This talk will present an overview of some classical as well as more recent results, which have been obtained via a wide range of different tools from complex and real algebraic geometry, optimization and combinatorics. (Based on joint work with T. Netzer, B. Sturmfels, A. Thom and C. Vinzant)