

(Thursday, July 10, 2014, Oberseminar Algorithmische Mathematik und Komplexitätstheorie, Technische Universität Berlin)

Beyond counting faces: Integral geometry of polyhedral cones

Every polyhedral cone C possesses an associated \mathbf{f} -vector, whose k th entry counts the k -dimensional faces of C . This talk is about certain weighted versions of the \mathbf{f} -vector, which we call the \mathbf{u} -vector and the \mathbf{v} -vector (the k th entry of the \mathbf{v} -vector is the k th intrinsic volume). Conic integral geometry is the theory of these vectors (and their localizations) for randomly formed cones. We will describe the algebraic foundations of this theory including characterization theorems and kinematic formulas. Surprisingly, it seems that the conic setting (as opposed to the better known Euclidean one) admits a very general kinematic formula, which might provide a real test for the notorious conic Hadwiger conjecture.