Weighted Floating Body of Polytopes

Florian Besau

Technische Universität Wien (Austria)

(Joint work with Carsten Schütt and Elizabeth M. Werner)

In this talk I will present on a work where we establish asymptotic results for the weighted floating body of n-dimensional convex polytopes. The weighted floating body is a generalization of the classical floating body which arises by replacing the usual Euclidean volume with a measure that has a positive and continuous density function.

In our results we establish an interesting connection between the volume of the floating body and the number of complete flags of a polytope. This flag number is an important combinatorial invariant and is the same as the number of simplices obtained in the barycenter subdivision. The flag number is minimized for the simplex and it is an open conjecture by Kalai, for $n \geqslant 4$, that the flag number of symmetric convex polytopes is minimized for the n-dimensional cube.