

Franz Schuster

TU Vienna

Affine vs. Euclidean isoperimetric inequalities

In this talk we explain how every even, zonal measure on the Euclidean unit sphere gives rise to an isoperimetric inequality for sets of finite perimeter which directly implies the classical Euclidean isoperimetric inequality. The strongest member of this large family of inequalities is shown to be the only affine invariant one among them – the Petty projection inequality. As application, a family of sharp Sobolev inequalities for functions of bounded variation is obtained, each of which is stronger than the classical Sobolev inequality. Moreover, corresponding families of L_p isoperimetric and Sobolev type inequalities are also presented. (joint work with Christoph Haberl)