

Valuations on Convex Sets

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Abstract

A somewhat mundane example of a "valuation" on compact convex sets is given by the volume function. Valuations are "almost the same thing as" finitely additive measures having values in abelian groups. Not only the volume but also the surface area, mean width, and the Euler characteristic yield interesting examples of valuations. In this talk many such examples, illustrating wide variety, will be described. There will be connections with Minkowski rings, Ehrhart polynomials, Gram's Relation, scissors congruence (Hilbert's Third Problem), and so forth.

Keywords: convex set, valuation, abelian group.