NGUYEN DAC KHOI NGUYEN, Memorial University

Surface area measures of α-concave functions and their Minkowski problem

An α-concave function serves as a functional generalization of convex bodies, which are main objects in the field of Convex Geometry. Among the key tools for studying convex bodies is the surface area measure, a measure on the sphere that contains the information of surface area of the convex body. In this talk, we first discuss the extension the concept of surface area measures from convex bodies to those of α-concave functions via a variational formula for their total mass.

The classical Minkowski problem asks for necessary and sufficient conditions for a Borel measure on the unit sphere to be the surface area measure of a convex body, and was first studied by Minkowski in 1897. Having defined the surface area measures of α-concave functions, it is natural to consider the Minkowski problem in this generalized setting. Notably, the main tool employed in addressing this problem is optimal transport, which is not a traditional approach to such problems