



Gastvortrag

Montag, 31. August 2026

Uhrzeit: 16:00 Uhr

Seminarraum I

Xiaxing Cai

TU Wien

Chord Sobolev inequalities

Abstract:

The classical Sobolev inequality and its fractional counterparts play a fundamental role in analysis, geometry, and partial differential equations. The fractional Sobolev inequalities also admit a remarkable interpretation through integral geometry. In this talk, I will introduce a new family of sharp functional inequalities, called chord Sobolev inequalities, which complete the missing half of this picture.

These inequalities arise naturally from chord power integrals and establish a new correspondence between geometric isoperimetric inequalities and Sobolev-type inequalities. I will discuss their sharp forms, equality cases, and endpoint limits, including a logarithmic Sobolev-type inequality. Together with the limiting results of Bourgain, Brezis, and Mironescu, they provide a complete family interpolating between geometric and analytic phenomena.

The proofs combine rearrangement techniques with new functional extensions of chord power integrals. (Joint work with Fernanda M. Baêta.)

Eingeladen von Christian Buchta und Fabian Mußnig