

FELIX KLEIN SEMINAR

Speaker: Mikhail Karpukhim
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Date: Thursday, February 25, 2021

Time: 2:00 PM

Location: Zoom

Zoom URL: notredame.zoom.us/j/91085941534?pwd=VTEzdC9HNWRkYmlSMzQwcnJ1UmFtZz09

Lecture Title:

Eigenvalues of the Laplacian and min-max for the energy functional

Abstract

The Laplacian is a canonical second order elliptic operator defined on any Riemannian manifold. The study of optimal upper bounds for its eigenvalues is a classical problem of spectral geometry going back to J. Hersch, P. Li and S.-T. Yau. It turns out that the optimal isoperimetric inequalities for Laplacian eigenvalues are closely related to minimal surfaces and harmonic maps. In the present talk we survey recent developments in the field with an emphasis on the beautiful interplay between spectral theory and geometric analysis. In particular, if time permits, we will discuss a min-max construction for the energy functional and its applications to eigenvalue inequalities, including the regularity theorem for optimal metrics. The latter is the joint work with D. Stern.