Isoperimetric problems in spectral geometry

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007 Kemeny Hall, 3:30PM
Tea 3:00 PM in 300 Kemeny Hall

Abstract
Spectral geometry is a young 50 year old branch of mathematics which is developing rapidly. It blends together differential geometry, partial differential equations, and analysis. To a large extent it is motivated by questions originating in the study of real-life phenomena, such as vibrations, oscillations of fluids, and quantum mechanics. This subject studies the links between the geometry of a space and the eigenvalues of a (pseudo)differential operator acting on functions of that space. In this talk I will be interested in two operators: the Laplace-Beltrami operator and the Dirichlet-to-Neumann map. My goal will be to overview the isoperimetric properties of their eigenvalues. Despite sharing many common features, we will see that these two operators are also drastically different from the point of view of isoperimetric control.

This talk should be accessible to graduate students.