

Announcement

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Datum: 3. Juli 2024

Seminar „Topics in Spectral Geometry“ im Wintersemester 2024/25 (ab 5. Sem.)

Preliminary meeting: Tuesday, 16.07.2024 - 13:00 , SR 2.066 (Geb. 20.30)
Time (WS 24/25): Tuesday, 09:45 - 11:15
Place: SR -1.008 (UG) (Geb. 20.30)

Content:

Many distinct physical processes, such as heat diffusion, wave propagation, electron movement in quantum physics, and fluid oscillations in a container, can be mathematically simulated using the Laplacian. The spectral properties of the operator rely slightly on the geometry of the underlying object on which it is defined, which could be a Riemannian manifold or a Euclidean domain. This dependence, or more precisely, the relationship between the geometry and the spectrum, is the main subject of spectral geometry and our seminar.

We will cover a range of subjects in this seminar that are included in the book *Topics in Spectral Geometry* by Iosif Polterovich, Dan Mangoubi, and Michael Levitin. Weyl's formula for the eigenvalue counting function and Pólya's conjecture are two examples of variational concepts and applications that we will investigate. There will also be a closer examination of the nodal geometry of eigenfunctions.

Prerequisites: Calculus I-III, Linear algebra I-II, Partial differential equations

References: Michael Levitin, Dan Mangoubi, Iosif Polterovich: *Topics in Spectral Geometry*