SPECTRAL ANALYSIS ON SINGULAR SPACES

ALEXANDER TEPLYAEV

The talk will outline recent results and challenges in spectral and stochastic analysis on non-smooth spaces that are very singular, but can be approximated by graphs or manifolds. In particular, the talk will present two interesting examples that are currently under investigation. One example deals with the spectral analysis of the Laplacian on the basilica Julia set, the Julia set of the polynomial $z^2 - 1$. This is a joint work with Luke Rogers and several students at UConn. The other example deals with spectral, stochastic, functional analysis for the canonical diffusion on the pattern spaces of an aperiodic Delone set, e.g. a quasicrystal lattice. This is a joint work with Patricia Alonso-Ruiz, Michael Hinz and Rodrigo Trevino.