

Abstract

Oberwolfach Workshop:

Geometry, Dynamics and Spectrum of Operators on Discrete Spaces

Dates:

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Organizers:

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Spectral theory is a gateway to fundamental insights in geometry and mathematical physics. Specifically, spectral theory governs the long term behavior of solutions of the Schrödinger equation and the heat equation, which itself is a key to understanding the geometry of the space. On the other hand, spectral estimates yield information on geometric concepts such as symmetry, volume growth and isoperimetry. In recent years the study of spectral problems in discrete spaces has gained enormous momentum. While there are some relations to continuum spaces which often can be understood at a lower technical cost, fascinating new phenomena have been discovered in the discrete setting throughout the last decade. These developments are due to a large number of researchers from diverse fields. However, one can roughly identify two viewpoints, that of mathematical physics and that of geometry. There is obviously a strong overlap between these two perspectives and some of the observed phenomena seem to be universal. So, our aim is to bring together researchers from different areas and to take advantage of the current strong momentum.