

# Seminarium geometrów

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Wtorek, 2.02.2021, 14:15, webinar

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## Detecting the singular points of an orbifold via its Hodge-Laplace spectrum

Abstract: Orbifolds are versatile generalisations of manifolds in which a neighbourhood about any point is modelled as the quotient of an open subset of  $\mathbb{R}^n$  by the action of a finite group. As in the case of smooth manifolds, smooth orbifolds can be endowed with a Riemannian metric. This structure allows one to use tools from spectral geometry to study topological and geometric properties of orbifolds. An open problem in differential geometry is to determine whether or not an orbifold with singularities can be distinguished from a manifold via their Laplace spectra. Although a partial affirmative answer to this problem has been given using orbifold heat invariants for the Laplace operator acting on functions, this problem is far from being solved.

In this talk I will give a brief introduction to orbifolds and to the problem of distinguishing a manifold from an orbifold in spectral geometry. I will also discuss the computation of heat invariants for the Hodge-Laplace operator on a Riemannian orbifold. As an application, I will show that the Hodge-Laplace spectrum for 1-forms along with that for functions provides enough information to detect singular points in dimensions two and three. This is joint work with Katie Gittins, Carolyn Gordon, Magda Khalile, Mary Sandoval and Elizabeth Stanhope.

*ZOOM meeting info:*

Meeting ID: 945 9956 8132

Meeting password: "GS" (two letters) followed by the Euler characteristic of the closed orientable surface of genus 89.