

Hearing 2 and 3 orbifolds with heat invariants

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A Riemannian orbifold is a generalisation of a manifold in which the local structure is that of a quotient of a Euclidean space by the action of a finite group of isometries. Such a local structure allows using the tools of spectral geometry, including the Laplace operator and its spectrum. In this context, a natural question is whether spectral data detects the presence of orbifold singularities. In 2008 Dryden, Gordon, Greenwald and Webb gave a partial affirmative answer using orbifold heat invariants for the Laplace operator acting on functions, however, there were some remaining cases.

In this talk I will discuss the computation of heat invariants for the Hodge Laplacian acting on 1-forms on Riemannian orbifolds. As an application, I will show how a combination of the heat invariants for functions along with those for 1-forms allows us to distinguish a singular n -dimensional orbifold from an n -dimensional manifold for $n = 2, 3$. This is a joint work with K. Gittins, C. Gordon, M. Khalile, M. Sandoval and E. Stanhope.