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Sarah J Greenwald* (greenwaldsj@appstate.edu), 121 Bodenheimer Drive, 326 Walker Hall, Boone, NC 28608, and **Emily Dryden, Carolyn Gordon** and **David Webb**. *Applications of heat invariants to 2-orbifolds.*

We study the relationship between the geometry and the Laplace spectrum of a Riemannian orbifold via its heat kernel; as in the manifold case, the time-zero asymptotic expansion of the heat kernel furnishes geometric information about the orbifold. H. Donnelly studied the heat expansion and computed the first few heat invariants of quotients of Riemannian manifolds by properly discontinuous group actions, in particular, good orbifolds. In joint work with E. Dryden, C. Gordon, and D. Webb, we extended the work of Donnelly to show the existence of the heat expansion on arbitrary compact orbifolds and we found the first few heat invariants. In this talk we will use these invariants to explore what classes of 2-orbifolds are spectrally determined. (Received March 03, 2009)