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Craig J. Sutton* (craig.j.sutton@dartmouth.edu), Department of Mathematics, Dartmouth College, Hanover, NH 03755. *Equivariant isospectrality and isospectral deformations of metrics on orbifolds.*

Most known examples of isospectral manifolds can be constructed through variations of Sunada's method or Gordon's torus method. In this talk we will explore these two techniques in the framework of equivariant isospectrality. After reviewing the techniques of Sunada and Gordon we introduce the concept of equivariant isospectrality and establish an equivariant version of Sunada's method. We then observe that many of the known examples arising from the torus method are equivariantly isospectral. Using this observation along with the equivariant Sunada technique we conclude that many of the known torus method examples cover manifolds which also admit pairs (and sometimes families) of isospectral metrics. Furthermore, we are able to construct continuous families of locally non-isometric metrics on orbifolds. Specifically, for each finite subgroup $\Gamma \leq T^2$ of the 2-torus and each $n \geq 8$ (resp. $n \geq 9$) there exists an orbifold (resp. orbifold with boundary) of dimension n which has points with Γ-isotropy and admits a continuous family of locally non-isometric isospectral metrics (resp. Dirichlet and Neumann isospectral metrics). (Received September 06, 2006)