1127-58-270 **Teresa Arias-Marco**, **Emily Dryden** and **Carolyn Gordon***, csgordon@dartmouth.edu, and **Asma Hassannezhad**, **Allie Ray** and **Elizabeth Stanhope**. *Spectral geometry of the Steklov problem on orbifolds.*

We consider how the geometry and topology of a compact Riemannian orbifold with boundary relates to its Steklov spectrum, i.e., to the spectrum of the Dirichlet-to-Neumann operator. In two dimensions, motivated by work of A. Girouard, L. Parnovski, I. Polterovich and D. Sher in the manifold setting, we compute the precise asymptotics of the Steklov spectrum in terms of only boundary data. As a consequence, we prove that the Steklov spectrum detects the presence and number of orbifold singularities on the boundary of an orbisurface and it detects the number each of smooth and singular boundary components. Moreover, we find that the Steklov spectrum also determines the lengths of the boundary components modulo an equivalence relation, and we show by examples that this result is the best possible. We give examples showing that the Steklov spectrum does *not* detect the presence of interior singularities nor does it determine the orbifold Euler characteristic. In fact, a flat disk is Steklov isospectral to a cone. (Received February 05, 2017)