

# Steklov and mixed eigenvalue bounds on surfaces

Emily Dryden

Bucknell University

The Steklov eigenvalues may be viewed as the squares of the natural vibration frequencies of a vibrating free membrane with some mass density concentrated along the boundary. We can also consider the boundary of the domain to be decomposed into two disjoint sets, with different boundary conditions on each set; this gives rise to the Steklov-Neumann and Steklov-Dirichlet eigenvalue problems. We present some upper bounds for these so-called mixed eigenvalues and investigate the sharpness of Steklov eigenvalue bounds when we restrict our attention to the rotationally symmetric setting.