

STEKLOV SPECTRAL FINITENESS FOR CONVEX POLYGONAL DOMAINS

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Which polygons are determined up to congruence by their spectra? We review some answers to this question for the Laplace spectrum, then move to the setting of the Steklov spectrum. Using a spectral invariant developed by Krymski, Levitin, Parnovski, Polterovich, and Sher, we show that for a large class of convex polygonal domains, there are at most finitely many non-congruent convex polygons with the same Steklov spectrum--in fact, we can give explicit upper bounds on the size of such sets. To expand the class within which we can prove finiteness, we develop isoperimetric bounds for the Steklov eigenvalues of a convex polygon in terms of its smallest interior angle.

This talk is based on joint work with Carolyn Gordon, Javier Moreno, Julie Rowlett, and Carlos Villegas Blas.