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Inverse Steklov spectral problem for curvilinear polygons

Consider the Steklov spectral problem on curvilinear polygons in $\mathbb{R}^2$. Assuming all angles are less than π, the high-energy asymptotics of the Steklov spectrum are known. Specifically, the spectrum is asymptotic to the zero set of an explicit trigonometric polynomial constructed from the side lengths and the angles of the polygon. Here we consider the corresponding inverse spectral problem. We show that the Steklov spectrum of a curvilinear polygon determines the number of vertices, the ordered sequence of side lengths, and - up to a natural equivalence relation - the angles of that curvilinear polygon. This is joint work with S. Krymski, M. Levitin, L. Parnovski, and I. Polterovich.