

THE STEKLOV SPECTRUM OF HYPERRECTANGLES

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ABSTRACT. While the computation of the spectrum of the Laplacian on a hyperrectangle in \mathbb{R}^d is a standard exercise for PDE students, understanding the Steklov spectrum on such a domain is more subtle. I will present recent results, joint work with Alexandre Girouard, Iosif Polterovich and Alessandro Savo, about both high energy asymptotics and bottom of the spectrum characterisation. More precisely, I will give a complete characterisation of the eigenfunction and the eigenvalues then show that we have two term asymptotics for the counting function of the eigenvalues that determine the $(d - 1)$ -volume of the boundary of the hyperrectangle and the $(d - 2)$ -volume of 2-boundary. I will also show that the hypercube maximises the first eigenvalue when normalised either by d -volume of the hyperrectangle or $(d - 1)$ -volume of the boundary.