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Shape Optimisation for Steklov transmission eigenvalues on surfaces

Consider a curve on a closed surface endowed with a Riemannian metric. The Steklov transmission problem is to find continuous functions which are harmonic away from the curve, and such that the jump of the normal derivative across the curve is proportional to the value of the function. Such functions are called Steklov transmission eigenfunctions, and the corresponding proportionality coefficients are called Steklov transmission eigenvalues. We will discuss shape optimisation questions for these eigenvalues, and highlight some similarities and differences compared to the usual Steklov case. The talk is based on a joint work with Mikhail Karpukhin (UCL).