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*Geometric homogenisation theory and spectral shape optimisation*

In this talk, I will discuss how we can obtain upper bounds for Laplace eigenvalues from bounds for Steklov eigenvalues. This will be done through geometric homogenisation methods, in order to approximate the Laplace spectrum of any surface by the Steklov spectrum of a domain in that surface. The usual theory of homogenisation uses the periodic structure of Euclidean space to describe limits of singular problems, and I will discuss how it can be adapted deterministically to a setting without notions of periodicity.