

Spectral stability and boundary homogenization for the biharmonic operator subject to Steklov boundary conditions

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Abstract. We consider two Steklov-type problems for the Biharmonic operator and study their spectral stability upon domain perturbation. One of the two problems is the classical DBS - Dirichlet Biharmonic Steklov - problem, the other one is a variant. Under a comparatively weak condition on the convergence of the domains, we prove the stability of the resolvent operators for both problems, which implies the stability of eigenvalues and eigenfunctions. Our condition turns out to be sharp at least for the variant of the DBS problem in which case the sharpness is proved by studying a natural boundary homogenization problem. In the case of the DBS problem, we prove stability of a suitable Dirichlet-to-Neumann type map under very weak conditions on the convergence of the domains and we formulate an open problem.