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# Sharp asymptotics of eigenvalues of the Laplacian in a domain with a shrinking tube

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In this talk, I will discuss the question of spectral stability for the Dirichlet-Laplacian in a particular class of singularly perturbed domains. More precisely, the perturbed domain consists of a fixed open set (the limit domain) and a thin tube, with vanishing section, attached to it. In this framework, I will state the sharp asymptotic behaviour of perturbed eigenvalues which are converging to simple eigenvalues of the limit problem. The main tools are an Almgren-type monotonicity formula and a blow-up analysis for scaled eigenfunctions.

This is a joint work with V. Felli.