

SPECTRAL STABILITY OF THE LAPLACIAN UNDER PERTURBATION OF THE BOUNDARY CONDITIONS

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In this talk I will discuss the behavior of the spectrum of the Laplacian on bounded domains, subject to varying mixed boundary conditions. More precisely, let us assume the boundary of the domain to be split into two parts, on which homogeneous Neumann and Dirichlet boundary conditions are respectively prescribed; let us then assume that, alternately, one of these regions “disappears” and the other one tends to cover the whole boundary. In this framework, I will first describe under which conditions the eigenvalues of the mixed problem converge to the ones of the limit problem (where a single kind of boundary condition is imposed); then, I will sharply quantify the rate of this convergence by providing an explicit first-order asymptotic expansion of the “perturbed” eigenvalues. These results have been obtained in collaboration with Veronica Felli and Benedetta Noris.