Spectrum Stability of an Elliptic Operator to Domain Perturbations

Dorin Bucur and Jean-Paul Zolésio

Equipe de Mathématiques UMR-CNRS 6623, Université de Franche-Comté,
16, route de Gray, 25030 Besancon, France, bucur@math.univ-fcomte.fr, and CNRS-INLN, 1361 Route des
Lucioles, and Centre de Mathématiques Appliquées, EMP, 2004 Route des Lucioles, 06902 Sophia Antipolis Cedex,
France

Abstract: This paper raises the question of the stability of the full spectrum of an elliptic operator in divergence form (with homogeneous Dirichlet boundary conditions) with respect to domain perturbations which modify continuously a limited number of "small" eigenvalues. If the perturbations are semi-compact and modify the measure continuously, we prove that the stability of the first eigenvalue implies the stability of the full spectrum, under the hypothesis that the perturbed domain is connected.

Keywords: Domain perturbation, eigenvalue, elliptic operator, shape continuity

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