RELATIONS BETWEEN TORSIONAL RIGIDITY AND PRINCIPAL EIGENVALUE

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Abstract

The relations between principal eigenvalue of the Laplace operator in a domain $\Omega$, with Dirichlet boundary conditions, and torsional rigidity, that is $\int_{\Omega} u \, dx$ where $u$ solves $-\Delta u = 1$ in $\Omega$ with zero trace on the boundary, are studied in the class of general domains, convex domains, and domains with a small thickness. This is of help to provide some bounds for the Blaschke-Santaló diagram of the two quantities. This is an ongoing research with Michiel van den Berg (Bristol) and Aldo Pratelli (Pisa).