SHARP ESTIMATES FOR THE FIRST p-LAPLACIAN EIGENVALUE AND FOR THE p-TORSIONAL RIGIDITY ON DOMAIN WITH HOLES

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Abstract. We study, in dimension $n \geq 2$, the eigenvalue problem and the torsional rigidity for the p-Laplacian on convex sets with holes, with outer Robin boundary conditions and internal Neumann boundary conditions. We prove that the annulus maximizes the first eigenvalue and minimizes the torsional rigidity when the measure and the external perimeter are fixed. Fixing the internal $(n-1)^t h$ quermassintegral, analogous estimate are obtained among domains with convex hole, when outer Neumann and internal Robin boundary conditions holds.
Based on a joint work with G. Paoli and L. Trani.

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