THE FIRST ROBIN-NEUMANN EIGENVALUE: ISOPERIMETRIC AND QUANTITATIVE INEQUALITIES

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In this talk we treat the first Robin-Neumann eigenvalue in the class of domains with fixed outer perimeter and volume. The spherical shell is the only maximizer for the afore-mentioned eigenvalue; moreover, we establish a quantitative version of the isoperimetric inequality. The main novelty consists in the introduction of a new type of hybrid asymmetry, that turns out to be the suitable one to treat the different conditions on the outer and internal boundary. Up to our knowledge, in this context, this is the first stability result in which both the outer and the inner boundary are perturbed.