



MAFIA - the seminar you can't refuse

Sharp and quantitative bounds for torsional rigidity with Dirichlet and Robin boundary conditions

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Abstract:

Torsional rigidity is a classical quantity associated with the Poisson problem with Dirichlet boundary conditions and is closely related to the geometry of the underlying domain. In this talk we consider open, bounded and convex sets in \mathbb{R}^n and present sharp geometric inequalities relating torsional rigidity to basic geometric quantities such as the perimeter, the measure of the set, and the inradius. We also discuss quantitative versions of these inequalities, where the deficit from the optimal constant provides information on the geometry of the optimal sequences. Finally, we address extensions of these results to torsional rigidity with Robin boundary conditions, focusing on the case of positive Robin parameter and highlighting the main similarities and differences with respect to the classical Dirichlet setting.