

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 6 de abril (quinta-feira), às 13h30, sala 6.2.33

On two functionals involving the maximum of the torsion function

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Abstract: The two most studied elliptic PDEs are probably the torsion problem, also known as St-Venant problem, and the Dirichlet eigenvalue problem. For these classical problems, many estimates and qualitative properties have been obtained, see for example works by Pólya, Szegő, Schiffer, Payne, Hersch, Bandle, and many others.

In this seminar I present some recent results about upper and lower bounds of two shape functionals involving the maximum of the torsion function: I consider the ratio $T(\Omega)\lambda_1/|\Omega|$ and the product $M(\Omega)\lambda_1(\Omega)$, where Ω is a bounded open set with finite Lebesgue measure $|\Omega|$, $T(\Omega)$ denotes the torsion, and $\lambda_1(\Omega)$ the first Dirichlet eigenvalue. Particular attention is devoted to the subclass of convex sets. This is a joint work with A. Henrot and G. Philippin.