

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 12 de Julho (quinta-feira), às 13H30, na sala 6.2.33

The Cheeger problem and an application to the (constant) Prescribed Mean Curvature problem

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Abstract

Given an open, bounded set Ω , one defines its Cheeger constant $h(\Omega)$ as the infimum of the ratio perimeter over volume among all of its subsets. Evaluating $h(\Omega)$ and finding the sets E that attain such a minimum is known as the Cheeger problem.

There are many possible motivations to study such a problem as the constant $h(\Omega)$ and minimizers of the ratio play a major role in different areas. In particular we shall discuss the connection with the (constant) prescribed mean curvature problem giving a characterization of existence and uniqueness of solutions in terms of the Cheeger problem.

It will be clear that being able to compute $h(\Omega)$ and knowing who the minimizers are is of interest. In general though these are difficult tasks, even in the planar case. We shall show that for a class of a Jordan domains there is a structure theorem for minimizers. On top of that, the so-called inner Cheeger formula holds and this allows to compute the exact value of $h(\Omega)$.

These results have been obtained in collaboration with G.P. Leonardi (Università di Modena e Reggio-Emilia, IT) and R. Neumayer (Northwestern University, USA)

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