

Conferencia

SANTALÓ 2010

La *Facultad de Ciencias Matemáticas* y la *Revista Matemática Complutense*, patrocinan la conferencia anual Santaló, impartida cada año por un profesor de reconocido prestigio. Esta conferencia marca el inicio de la actividad docente e investigadora de la Facultad en cada año académico.

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Spectral Optimization Problems

In this talk I will describe some classes of shape optimization problems of the form

$$\min\{F(\Omega):\Omega\in\mathcal{A}\}$$

where the unknown Ω varies in a suitable family \mathcal{A} of domains and the cost function $F(\Omega)$ depends on Ω through the solution u_Ω of an elliptic PDE in Ω . Two main cases fall in this scheme: the case of integral functionals

$$F(\Omega)=\int_{\mathbb{R}^d}j(x,u_\Omega(x))dx$$

and the case of functions of the spectrum of an elliptic operator

$$F(\Omega)=\Phi(\lambda(\Omega)).$$

One of the main issues is concerned with the existence of optimal domains; while in general this cannot be expected, as some simple counterexamples show, in several interesting cases optimal domains actually exist.

In the lecture several open problems and new directions of research will be addressed.

JUEVES, 7 DE OCTUBRE DE 2010

13:00 HORAS

AULA S-118 "MIGUEL DE GUZMÁN"

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