DEPARTAMENTO DE
ANÁLISIS MATEMÁTICO Y
MATEMÁTICA APLICADA

Instituto de Matemática Interdisciplinar

# SEMINARIO DE MATEMÁTICA APLICADA


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## Maximal solutions for the $\infty$ -eigenvalue


Abstract: We show that the first eigenvalue of the $\infty-$Laplacian

$$\begin{cases} \min\{-\Delta_\infty v,\ |\nabla v| - \lambda_{1,\infty}(\Omega) v\} = 0 & \text{in } \Omega \\ v = 0 & \text{on } \partial\Omega, \end{cases}$$

has a unique (up to scalar multiplication) maximal solution. This maximal solution is obtained as the limit as $l \nearrow 1$ of concave problems of the form

$$\begin{cases} \min\{-\Delta_\infty v_l,\ |\nabla v_l| - \lambda_{1,\infty}(\Omega) v_l^l\} = 0 & \text{in } \Omega \\ v_l = 0 & \text{on } \partial\Omega. \end{cases}$$

In this way we obtain that the maximal eigenfunction is the unique one that is the limit of the sub-homogeneous problems as happens for the usual eigenvalue problem for the $p-$Laplacian for a fixed $1 < p < \infty$.

Joint work with J. V. da Silva and A. Salort.


**Organizado por el Instituto de Matemática Interdisciplinar (IMI),
y el Departamento de Análisis Matemático y Matemática Aplicada**

**Fecha: Martes, 22 de mayo**
**Hora: 11:00h**
**Lugar: Aula 209 (Seminario Alberto Dou)**
**Facultad de CC Matemáticas, UCM**