SEMINARIO DE ANÁLISIS Y APLICACIONES

Viernes 10 de marzo,

11:00 h., Aula Naranja (ICMAT)

Marta De León-Contreras

Universidad de La Laguna

The spectrum of the plasmonic problem for polyhedra

Resumen:

In this talk we will see how to describe the spectrum of the *plasmonic problem* for polyhedra Ω in $\mathbb{R}^3$, where the plasmonic problem consists of seeking a potential U,

$$U(x) = o(1), \qquad |x| \to \infty,$$

such that

$$\Delta U(x) = 0, \qquad x \in \mathbb{R}^3 \setminus \partial\Omega,$$

and satisfies

$$\mathrm{Tr}_+ U = \mathrm{Tr}_- U, \qquad \epsilon \left(\frac{\partial}{\partial n} U\right)_+ - \left(\frac{\partial}{\partial n} U\right)_- = g \quad \text{on } \partial\Omega.$$

Here, $\mathrm{Tr}_\pm U$ and $\left(\frac{\partial}{\partial n} U\right)_\pm$ denote the interior/exterior traces and limiting outward normal derivatives of U on $\partial\Omega$. For that aim, we will interpret the plasmonic problem as a spectral problem through an integral operator in the boundary, the direct value of the layer potential, also known as the **Neumann–Poincaré** operator. Therefore, we will study the spectrum of the double layer potential in infinite polyhedral cones and after that, by using localization techniques, we will get the result for bounded polyhedra.

The contents of this talk is based on a joint work with K. M. Perfekt.

ICMAT CSIC-UAM-UC3M-UCM
Departamento de Matemáticas. U.A.M.
Proyecto CEX2019-000904-S financiado por MCIN/ AEI/10.13039/501100011033.

Universidad Autónoma de Madrid

excelencia UAM CSIC

ICMAT INSTITUTO DE CIENCIAS MATEMÁTICAS

MINISTERIO DE CIENCIA E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN