**III ENCUENTROS DE PROBLEMAS INVERSOS**

Jueves 23 de marzo de 2017. C-17 aula 520
10:00-10:50
Mikko Salo:
The Calderón problem for the fractional Laplacian
We show global uniqueness in an inverse problem for the fractional Schrödinger equation: an unknown potential in a bounded domain is uniquely determined by exterior measurements of solutions. We also show global uniqueness in the partial data problem where the measurements are taken in an arbitrary open, possibly disjoint, subsets of the exterior. The results apply in any dimension $\geq 2$ and are based on a strong approximation property of the fractional equation that extends earlier work. This special feature of the nonlocal equation renders the analysis of related inverse problems radically different from the traditional Calderón problem. This is a joint work with T. Ghosh (HKUST) and G. Uhlmann (Washington).

11:00 a 12:00
Carlos Castro (UPM) Numerical approximation of a potential from fixed angle scattering data

We consider the inverse scattering problem for the Schr\"{o}dinger operator $-\Delta+q(x)$ in $\mathbb{R}^2$, where $q(x)$ is a real potential with compact support. We are interested in recovering the potential $q(x)$ from the scattering amplitude at fixed angle $\theta_0$. The numerical approximations are obtained in two steps: first we introduce a new convergent iterative algorithm to approximate $q$ in terms of the scattering data, and then we discretize these approximations using asuitable trigonometric basis. The result is illustrated with several numerical examples. This is a joint work with J.A. Barceló, M.C. Vilela and T. Luque.

12:00 a 12:50
Jorge Tejero ( ICMat )
Reconstruction and stability for piecewise smooth potentials in the plane.

In this talk we will briefly describe Bukhgeim's approach for reconstructing a complex potentials in the plane and we will see how it can be used to reconstruct a potential with line discontinuities. Also a stability estimate, conditional to an approximate knwoledge of the location of the discontinuities, will be given.

Lunch 13:00a 14:30

14:40 a 15:50
Yavar Kian (Aix Marseille Université)
Determination of time-dependent coefficients for parabolic equations and applications

Let $\Omega$ be a bounded domain of $\R^n$, $n\geq2$, and fix $Q=(0,T)\times\Omega$ with $T>0$. We consider the inverse problem of determining (in some suitable sense) a function $q\in L^\infty(Q)$ and a vector valued function $A\in L^\infty(Q;\R^n)$ appearing in a Dirichlet initial-boundary value problem for the parabolic equation $\partial_tu-

\Delta_xu+A(t,x)\cdot\nabla_xu+q(t,x)u=0$ in $Q$, from observations on $(0,T)\times\partial \Omega$. We consider both results of uniqueness and stability for this problem. Moreover, we apply our result to the recovery of some nonlinear term appearing in a parabolic equation from boundary measurements. This talk is based on a joint work with Mourad Choulli and some work in progress with Pedro Caro.

15:50 a 16:30
Martí Prats (UAM-ICMAT)
Characterization for stability in planar conductivities

We find a complete characterization for sets of uniformly strongly elliptic and isotropic conductivities with stable recovery in the $L^2$ norm when the data of the Calderón Inverse Conductivity Problem is obtained in the boundary of a disk and the conductivities are constant in a neighbourhood of its boundary.
To obtain this result, we present minimal a priori assumptions that turn out to be sufficient for sets of conductivities to have stable recovery in a bounded and rough domain. The condition is presented in terms of the integral moduli of continuity of the coefficients involved and their ellipticity bound as conjectured by Alessandrini in his 2007 paper.