

# 中央研究院數學研究所

Institute of Mathematics, Academia Sinica

## Taipei Postdoc Seminar

**Speaker** : Dr. Manas Kar  
(National Center for Theoretical Sciences)

**Title** : *Inverse parameter identification problems for p-Laplace equation*

**Abstract** : In general, inverse problems are those where one needs to recover the unknown parameter of a system from the observation made on the exterior of the system. We consider a particular type of inverse problems, so-called Calder\on problems, where the main interest is to determine the conductivity of an object from the boundary electrical current measurements. This kind of problems has been studied since 1980's and it has several applications in electrical impedance tomography (EIT), CT scans, medical imaging, geophysics etc. In this talk, I will begin by giving some motivation on Calder\on inverse problems for the linear conductivity model. Then I will discuss on inverse problems related to p-Laplace equation, which is the most natural generalisation of the conductivity equation. Mainly, I will talk about the interior uniqueness result for the conductivity and some results on the obstacle detection problem. Regarding the interior uniqueness result, we will prove that any two conductivities with  $\sigma_1 \geq \sigma_2$  having same nonlinear Dirichlet to Neumann map must be identical in the planar domain and in the higher dimensional domain the same result will be true for conductivities close to constant. Finally, we will give a justification of enclosure method and monotonicity method for this nonlinear model to reconstruct the convex hull of an unknown obstacle.

**Time** : 11:00 – 12:30, Wednesday, December 7, 2016

**Venue** : Room 638, Astro-Math. Building (NTU Campus)

**Organizer** : Yu-Yen Chien (NCTS), Jyun-Ao Lin (Academia Sinica)

**Refreshment** : 10:30

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