Reconstruction for the coefficients of a quasilinear elliptic partial differential equation

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Abstract

In this talk, we consider an inverse coefficients problem for a quasilinear elliptic equation of divergence form $\nabla \cdot \vec{C}(x, \nabla u(x)) = 0$, in a bounded smooth domain Ω. We assume that $\overrightarrow{C}(x, \vec{p}) = \gamma(x)\vec{p} + \vec{b}(x)|\vec{p}|^2 + \mathcal{O}(|\vec{p}|^3)$, by expanding $\overrightarrow{C}(x, \vec{p})$ around $\vec{p} = 0$. We give a reconstruction method for γ and $\vec{b}$ from the Dirichlet to Neumann map defined on $\partial\Omega$.

This is a joint work with Cătălin I. Cârstea (distinguished associate researcher), School of Mathematics, Sichuan University, China and Gen Nakamura (emeritus professor), Department of Mathematics, Hokkaido University, Japan.