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 \( \nabla \cdot \overline{C}(x, \nabla u(x)) = 0 \), in a bounded smooth domain \( \Omega \). We assume that \( \overline{C}(x, \overline{p}) = \gamma(x) \overline{p} + \overline{b}(x)|\overline{p}|^2 + \mathcal{O}(|\overline{p}|^3) \), by expanding \( \overline{C}(x, \overline{p}) \) around \( \overline{p} = 0 \). We give a reconstruction method for \( \gamma \) and \( \overline{b} \) from the Dirichlet to Neumann map defined on \( \partial \Omega \).

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