

Group Seminar

Inverse Problems and Mathematical Imaging

Inverse problems for elliptic equations with power type nonlinearities

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sehr Abstract

We introduce a method for solving Calderón type inverse problems for semilinear equations with power type nonlinearities. The method is based on higher order linearizations, and it allows one to solve inverse problems for certain nonlinear equations in cases where the solution for a corresponding linear equation is not known. Assuming the knowledge of a nonlinear Dirichlet-to- Neumann map, we determine both a potential and a conformal manifold simultaneously in dimension 2, and a potential on transversally anisotropic manifolds in dimensions $n \geq 3$. In the Euclidean case, we show that one can solve the Calderón problem for certain semilinear equations in a surprisingly simple way without using complex geometrical optics solutions.