Inverse problems for nonlinear elliptic PDE and linearized anisotropic Calderón problem

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In the first part of the talk we shall discuss some recent progress for inverse boundary problems for nonlinear elliptic PDE. Our focus will be on inverse problems for isotropic quasilinear conductivity equations, as well as nonlinear Schrödinger and magnetic Schrödinger equations. In particular, we shall see that the presence of a nonlinearity may actually help, allowing one to solve inverse problems in situations where the corresponding linear counterpart is open. In the second part of the talk, we shall discuss a solution of the linearized anisotropic Calderón problem on transversally anisotropic manifolds, under the assumption that the transversal manifold is real analytic and satisfies certain conditions related to the geometry of pairs of intersecting geodesics. Our result does not require the assumption of the injectivity of the geodesic X-ray transform on the transversal manifold. This talk is based on joint works with Cătălin Cârstea, Ali Feizmohammadi, Yavar Kian, Tony Liimatainen, Mikko Salo, and Gunther Uhlmann.