Inverse Problems Network Meeting 5

Thursday, 23rd May 2019 - Friday, 24th May 2019

University of Kent

Abstract of Talk

INVERSE PROBLEM FOR A SEMI-LINEAR ELLIPTIC EQUATION

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We consider the Dirichlet-to-Neumann map, defined in a suitable sense, for the equation $-\Delta u + V(x,u) = 0$ on a compact Riemannian manifold with boundary. We show that, under certain geometrical assumptions, the Dirichlet-to-Neumann map determines V for a large class of non-linearities. The proof is constructive and is based on a multiple-fold linearization of the semi-linear equation near complex geometric optics solutions for the linearized operator, and the resulting non-linear interactions. This approach allows us to reduce the inverse problem boundary value problem to the purely geometric problem to invert a family of weighted ray transforms. This is a joint work with Ali Feizmohammadi.