An inverse problem for a semi-linear elliptic equation (Joint w/ IP seminar)
Ali Feizmohammadi (University College London)

Tuesday, February 25, 2020 - 4:00pm to 5:00pm
PDL C-401

Abstract: We study the inverse problem of unique recovery of a complex-valued scalar function $V : M \times C \rightarrow C$, defined over a smooth compact Riemannian manifold $(M, g)$ with smooth boundary, given the Dirichlet to Neumann map, in a suitable sense, for the elliptic semi-linear equation $-\Delta u + V(x, u) = 0$. We show that uniqueness can be proved 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 optic solutions for the linearized operator and the resulting non-linear interactions. These interactions result in the study of a weighted transform along geodesics, that we call the Jacobi weighted ray transform. The talk is based on a recent joint work with Lauri Oksanen.

Related Links:
TBA