Eigenvalue Problems for a Scatterer with a Conductive Boundary

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Abstract: In this talk, we will investigate the inverse acoustic scattering problem associated with an inhomogeneous media with a conductive boundary. We consider the corresponding classical transmission eigenvalue problem as well as the zero-index eigenvalue problem. This is a new class of eigenvalue problem that is not elliptic, not self-adjoint, and non-linear, which gives the possibility of complex eigenvalues. We investigate the convergence of the eigenvalues as the conductivity parameter tends to zero (and infinity) as well as prove existence and discreteness for the case of an absorbing media.

This is joint work with: R.-C. Ayala, O. Bondarenko, A. Kleefeld, and N. Pallikarakis.