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Colloquium

A Qualitative Approach to Inverse Electromagnetic Scattering for Inhomogeneous Media

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Abstract: Since the introduction of the linear sampling method in 1996 followed by the factorization method in 1998 and later the proof of the existence and monotonicity properties of real transmission eigenvalues in 2010, qualitative methods have become a popular approach for solving inverse scattering problems. Interest in this area has exploded and the vast amount of literature currently available is an indication of the myriad directions that this research has taken. In this talk we consider the inverse electromagnetic scattering problem for an inhomogeneous (possibly anisotropic) media and show how to obtain information about the support as well as the electric and magnetic properties of the media based on an investigation of the corresponding far field operator. At the foundation of this investigation is the so-called the transmission eigenvalue problem, which is a non-linear and non-selfadjoint eigenvalue problem. In particular, we will discuss the relevance of the transmission eigenvalue problem for Maxwell's equations and present what type of information transmission eigenvalues provide about the inhomogeneity.

Date: Friday, 9 December 2016
Time: 3:30 p.m. – 4:30 p.m.
Venue: Rm 222, Lady Shaw Building,
The Chinese University of Hong Kong, Shatin

All are Welcome!