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Abstract of Talk

AN INVERSE SCATTERING PROBLEM IN RANDOM MEDIA

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In inverse scattering theory the aim is to determine a scattering potential q from appropriate measurements. In many applications the scatterer is non-smooth and vastly complicated. For such scatterers, the inverse problem is not so much to recover the exact micro-structure of an object but merely to determine the parameters or functions describing the properties of the micro-structure. An example of such a parameter is the correlation length of the medium which is related to the typical size of “particles” inside the scatterer. In mathematical terms, the potential q is assumed to be a Gaussian random function whose covariance operator is a classical pseudo-differential operator. We show that the backscattered field, obtained from a single realization of the random potential q , determines uniquely the principal symbol of the covariance operator. This is a joint work with Tapio Helin and Matti Lassas.