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**Yat Tin Chow\*** ([ytchow@math.ucla.edu](mailto:ytchow@math.ucla.edu)). *Super-resolution in Imaging High Contrast Targets from the Perspective of Scattering Coefficients.*

In this talk, we are concerned with an acoustic / transverse electric (TE) / transverse magnetic (TM) inverse scattering problem. We mathematically analyze the experimentally-observed phenomenon of super-resolution in imaging high-contrast targets based on the concept of scattering coefficient.

We first introduce the notion of scattering coefficients for heterogeneous media and analyze this entity to help us understand the exponential ill-posed-ness of the problem at a fixed frequency. Based on this novel concept of scattering coefficients, sensitivity and resolution analysis are performed to mathematically assess the reconstruction quality and justify the super-resolution phenomenon in imaging some high contrast targets. We illustrate our main findings with a variety of numerical examples. These findings may help in developing resonant structures for resolution enhancement.

This talk is based on joint works with Habib Ammari (ETH) and Jun Zou (CUHK). (Received September 18, 2015)