Shape Reconstructions by Using Plasmon Resonances with Enhanced Sensitivity

Minghui DING

Department of Mathematics, City University of Hong Kong, Hong Kong

Email: mingding@cityu.edu.hk

This talk discusses the shape reconstructions of sub-wavelength objects from near-field measurements. We develop a novel reconstruction scheme using plasmon resonances. First, we establish a sharp quantitative relationship between the sensitivity of the reconstruction and the plasmon resonance. Second, the variational regularization method, alternating iteration method, and Laplace approximation method are introduced to reconstruct the object. Finally, the numerical performance verifies the proposed method. This talk is based on joint works with professor Hongyu Liu (CityU) and associate professor Guanghui Zheng (HNU).