

1143-35-51

Juan Liu and **Jiguang Sun***, jiguangs@mtu.edu. *Extended Sampling Method in Inverse Scattering*.

A new sampling method for inverse scattering problems is proposed to process far field data of one incident wave. The method sets up ill-posed integral equations and uses the (approximate) solutions to reconstruct the target. In contrast to the classical linear sampling method, the kernels of the associated integral operators are the far field patterns of sound-soft balls. The measured data is moved to right hand sides of the equations, which gives the method the ability to process limited aperture data. Furthermore, a multilevel technique is employed to improve the reconstruction. Numerical examples show that the method can effectively determine the location and approximate the support with little a priori information of the unknown target. (Received July 20, 2018)