1030-78-250   **Gang Bao** and **Peijun Li*** (`lipeijun@umich.edu`), Department of Mathematics, University of Michigan, Ann Arbor, MI 48109. *Inverse medium scattering for Maxwell's equations at fixed frequency.*

Consider a time-harmonic electromagnetic plane wave incident on a medium enclosed by a bounded domain in $\mathbb{R}^3$. A regularized recursive linearization method for the inverse medium scattering, which reconstructs the scatterer of an inhomogeneous medium from the boundary measurements of the scattered field, is developed. The algorithm requires only single-frequency data. Using an initial guess from the Born approximation, each update is obtained via continuation on the spatial frequency of two-parameter family of plane waves by solving one direct and one adjoint problem of the Maxwell equations. (Received August 04, 2007)