

**Direct and Inverse Problems for The Nonlinear Time-Harmonic Maxwell Equations**

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We consider an inverse boundary value problem of electromagnetism in a nonlinear Kerr medium or with the second harmonic generation nonlinearity. We show the unique determination of the electromagnetic material parameters and the nonlinear susceptibility parameters of the medium by making electromagnetic measurements on the boundary. We are interested in the case of the time-harmonic Maxwell equations.

This is a joint work with Dr. Yernat Assylbekov.