

**Meeting:** 1005, Newark, Delaware, SS 3A, Special Session on Mathematical Methods in Electromagnetic Wave Propagation

1005-35-176      **Thomas I. Seidman\*** ([seidman@math.umbc.edu](mailto:seidman@math.umbc.edu)), Department of Mathematics and Statistics, University of Maryland Baltimore County, Baltimore, MD 21250. *Eddy currents induced in a nonlinearly ferromagnetic conductor.*

Given a periodically varying external magnetic field (for suitable geometry), the vector potential has a single nonzero component, satisfying a nonlinear (scalar) parabolic equation. We show that this has a periodic solution with continuous dependence for the physically meaningful unknown. Some comments will be made on numerical computation and on the relation of penetration depth to the nonlinearity. (Received February 08, 2005)