1014-65-971 **Susanne C. Brenner** and **Fengyan Li*** (fli@math.sc.edu), Department of Mathematics, University of South Carolina, Columbia, SC 29208, and **Li-Yeng Sung**. *A Nonconforming Finite Element Method for the Reduced Time-Harmonic Maxwell Equations.*

It is known that the straightforward discretization of the time-harmonic Maxwell equations using the Crouzeix-Raviart nonconforming finite element space does not converge. In this presentation, we propose a numerical scheme for the divergence-free part of the solution of time-harmonic Maxwell equations (which is referred to as the reduced time-harmonic Maxwell equations). The scheme is based on a discretization that uses the locally divergence-free Crouzeix-Raviart nonconforming P_1 elements and includes a stabilizing consistent term involving the jumps of the vector fields across element boundaries. Optimal convergence rates in both the energy norm and L^2 norm are established on graded meshes, which are verified by the numerical results. (Received September 26, 2005)