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**Yingxue Zhao\*** ([yzhao112@students.desu.edu](mailto:yzhao112@students.desu.edu)). *Numerical Methods for Solving Cold-Fluid Maxwell's Equations with Applications to the Second Harmonic Generation from Metallic Nanoparticles.*

In this work, we develop a numerical method for solving the three-dimensional cold-plasma Maxwell's equations system that describes the electron gas dynamics driven by an external electromagnetic wave excitation. Our numerical approach is based on the Finite-Difference Time-Domain (FDTD) method for solving the Maxwell's equations and a finite difference method for the cold-fluid equations.

Numerical results show that our model is suitable for studying the second-harmonic generation (SHG) from metallic nanoparticles. (Received September 15, 2013)