

High Accuracy Electromagnetic Finite Element Analysis
Eric M. Nelson
Los Alamos National Laboratory

A high accuracy 3D electromagnetic finite element field solver employing quadratic hexahedral elements and quadratic mixed-order one-form basis functions will be described. Test cases demonstrate that frequency errors less than 10 ppm can be achieved using modest workstations, and that the solutions have no contamination from spurious modes. The role of differential geometry and geometrical physics in finite element analysis will also be discussed.

Eric M. Nelson
LANL, MS B259
Los Alamos, NM 87545
(505)665-6350
enelson@lanl.gov