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X. Jiang, L. Zhang and W. Zheng* (zwy@lsec.cc.ac.cn), No. 55, ZhongGuanCun East Road, Haidian District, P.O. Box 2719, Beijing, 100190, Peoples Rep of China. *On hp-adaptive finite element methods for time-harmonic Maxwell's equations.*

In this lecture, I am going to talk about hp-adaptive finite element methods for time-harmonic Maxwell's equations. We propose two *hp*-adaptive algorithms using residual-based a posteriori error estimates and unstructured tetrahedral meshes. Extensive numerical experiments are reported to investigate the efficiency of the *hp*-adaptive methods for point singularities, edge singularities, and an engineering benchmark problem. By large-scale computations based on MPI, we obtain exponential decay of the error with respect to the number of degrees of freedom for all the experiments. (Received August 23, 2011)