AN ADAPTIVE PERFECTLY MATCHED LAYER
TECHNIQUE FOR 3-D TIME-HARMONIC
ELECTROMAGNETIC SCATTERING PROBLEMS

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ABSTRACT. We develop an adaptive perfectly matched layer (PML) technique for solving the time harmonic electromagnetic scattering problems. The PML parameters such as the thickness of the layer and the fictitious medium property are determined through sharp a posteriori error estimates. Combined with the adaptive finite element method, the adaptive PML technique provides a complete numerical strategy to solve the scattering problem in the framework of FEM which produces automatically coarse mesh size away from the fixed domain and thus makes the total computational costs insensitive to the thickness of the PML absorbing layer. Numerical experiments are included to illustrate the competitive behavior of the proposed adaptive method.