

In this paper, the perfectly matched layer (PML) based on transformation of space into the complex domain is assessed in the method-of-lines framework. The method used in the assessment is based on field symmetry and has the advantage of eliminating numerical error due to discretization of space. The remaining error, which is due only to reflection from the PML, is used to quantify the PML performance. This assessment method is used to demonstrate that higher order approximation to the transverse second derivative operator results in substantial reduction in the unwanted numerical reflection from the PML, leading to enhanced PML efficiency. By using higher order approximation in tandem with a suitably graded PML loss profile, it is possible to obtain a very efficient PML implementation, making it possible to effectively absorb a beam with a large angular spread using only a few number of sample points in the PML.