Abstracts

Behavior of Berenger's ABC for Evanescent Waves

J. De Moerloose and M.A. Stuchly. "Behavior of Berenger's ABC for Evanescent Waves." 1995 Microwave and Guided Wave Letters 5.10 (Oct. 1995 [MGWL]): 344-346.

A recently published ABC by Berenger has been shown to outperform all previous ABC's by several orders of magnitude. The cornerstone of this ABC is the so called Perfectly Matched Layer (PML). This layer absorbs electromagnetic waves incident at all angles without any reflection. In this letter we evaluate basic properties of the PML-medium for incident evanescent or inhomogeneous plane waves. We show that the evanescent wave is phase-shifted upon entering the PML-medium but retains its natural damping. Moreover, a substantial numerical reflection error must be taken into account, especially in the low frequency range. These results may be important in determining the number of PML-layers needed to obtain a given accuracy.

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