Abstracts

A New Look at the Perfectly Matched Layer (PML) Concept for the Reflectionless Absorption of Electromagnetic Waves

R. Mittra and U. Pekel. "A New Look at the Perfectly Matched Layer (PML) Concept for the Reflectionless Absorption of Electromagnetic Waves." 1995 Microwave and Guided Wave Letters 5.3 (Mar. 1995 [MGWL]): 84-86.

The Perfectly Matched Layer (PML) concept has been introduced recently by Berenger with the objective of developing an absorbing boundary condition for the Finite Difference Time Domain (FDTD) method. In its original formulation, the PML approach is based on the splitting of the field components into two sub-components which are weighted with different constituent parameters. The objectives of this paper are to take a critical look at the PML concept with a view to providing some interpretations of the same; to examine the Maxwellian nature of the PML layer; to present a version of the PML approach that does not involve the "splitting" and the resulting six components for each of the electric and magnetic fields in the PML layer; and, finally, to compare it with other approaches, e.g., co-ordinate scaling.

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