Abstracts

A General Approach for the Development of Unsplit-Field Time-Domain Implementations of Perfectly Matched Layers for FDTD Grid Truncation

L. Zhao and A.C. Cangellaris. "A General Approach for the Development of Unsplit-Field Time-Domain Implementations of Perfectly Matched Layers for FDTD Grid Truncation." 1996 Microwave and Guided Wave Letters 6.5 (May 1996 [MGWL]): 209-211.

It is shown that the anisotropic perfectly matched medium, proposed recently for the construction of reflectionless absorbing boundaries for differential equation-based electromagnetic simulations in unbounded domains, can be made equivalent to the Chew-Weedon perfectly matched medium developed from a modfied Maxwell's system with coordinate stretching. Consequently, despite the apparently nonphysical coordinate stretching, Chew-Weedon's formulation, with an appropriate definition of the involved electric and magnetic fields, is merely an alternative mathematical form of Maxwell's system in an anisotropic medium. Finally, a more convenient time-domain implementation of the perfectly matched layer without splitting of the field components is derived.

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