Abstracts

A total-variation-diminishing finite-difference scheme for the transient response of a lossless transmission line

Total-variation-diminishing (TVD) finite-difference schemes have been used in computational fluid dynamics for accurate solutions of fluid problems involving shock phenomena. This paper investigates the possibility of their application in transient electromagnetic-wave problems. A lossless transmission line with a resistive load is considered to illustrate the application. A TVD Lax-Wendroff finite-difference scheme is presented for the numerical solution of transmission-line equations in time domain. Numerical results show that the TVD scheme can approximate the discontinuous waveforms with remarkable accuracy.

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