Abstracts

Resolution of the Paradox Concerning Energy Flow on Nonlinear Transmission Lines (Short Papers)

A.E. Karbowiak and R.H. Freeman. "Resolution of the Paradox Concerning Energy Flow on Nonlinear Transmission Lines (Short Papers)." 1973 Transactions on Microwave Theory and Techniques 21.5 (May 1973 [T-MTT]): 357-358.

The energy relations and the constitutive relations pertaining to a nonlinear transmission line are examined in detail. It is concluded that mathematical models which have been used in certain studies and which lead to the paradox concerning energy dissipation in the shock front are inadmissible. Correct models are free from such paradoxes. The work leads to the formulation of the hypothesis of realization: it is impossible to realize a continuous loss-free transmission medium which would be characterized by nonlinear distributed inductance L(I) and capacitance C(V), unless the medium is dispersive.

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