Abstracts

Inverse Scattering Method for One-Dimensional Inhomogeneous Lossy Medium by Using a Microwave Networking Technique

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The formulation of reflection coefficients from an inhomogeneous lossy medium illuminated by TE and TM waves is approximately derived, in closed form, by using a microwave network method. From the formulation, a novel inverse scattering scheme to reconstruct simultaneously the permittivity and conductivity profiles, is proposed. This scheme is suitable for both continuous and discontinuous profiles, under both the weak scattering and strong scattering conditions. It has also been shown that when the conductivity of the medium equals zero, the reconstructed result of this scheme will reduce to the one in [14]. Numerical and closed-form reconstruction examples show the validity of the scheme.

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