Abstracts

Reconstructing permittivity profiles using an improved renormalization technique

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A new approach for reconstructing the permittivity profile of a half space medium illuminated by TEM, TE or TM polarized waves is presented. It depends on an improved renormalization technique in conjunction with a revised version of the non-linear Riccati differential equation describing the direct problem. The method represents fundamental bases for 3D-generalization, which is essential for microwave imaging used, e,g., in biomedical applications. A known permittivity profile has been taken to generate reflection coefficient data. These data have been used in conjunction with the proposed technique to reconstruct the permittivity profile. Deviation of a maximum of 2% between original and reconstructed profiles could be easily achieved.

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