

Abstracts

Improving Microwave Imaging by Enhancing Diffraction Tomography

R.D. Murch and T.K.K. Chan. "Improving Microwave Imaging by Enhancing Diffraction Tomography." 1996 Transactions on Microwave Theory and Techniques 44.3 (Mar. 1996 [T-MTT]): 379-388.

In this paper, a technique for enhancing the reconstruction quality of diffraction tomography for microwave imaging is presented. The technique invokes the WKB approximation in conjunction with utilizing measurement data at more than one frequency to overcome some of the limitations of diffraction tomography. The resulting formulation has a mathematical interpretation which leads to some interesting insights into the limitations of diffraction tomography. Numerical implementation of the technique is also described and actual simulation results using this implementation for a variety of two-dimensional (2-D) objects are provided. These show that indeed significant improvements over conventional diffraction tomography are possible with our enhanced technique.

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