Abstracts

Electromagnetic scattering by metallic holes and its applications in microwave circuit design

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The problem of arbitrarily incident plane-wave scattering from rod structures of thick conducting plates arranged with two-dimensional (2D) periodicity has been examined. The square approximation as well as truncated-square approximation of circular cross sections is used in this study. The impedance of cascaded screens and the reflection coefficient is calculated using the multimodal variational method for both TE- and TM-polarized incident electric field. The 2D periodic structure of holes described in this paper can be used for the purpose of designing new guiding microwave structures. A transverse resonance method is applied to solve this problem. The convergence behavior of the technique has also been examined. The numerical results of the reflection coefficient, surface impedance, and dispersion curves are presented.

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