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Title:Equivalent circuit analysis of terahertz metamaterial filters

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Abstract:An equivalent circuit model for the analysis and design of terahertz (THz) metamaterial filters is presented. The proposed model, derived based on LMC equivalent circuits, takes into account the detailed geometrical parameters and the presence of a dielectric substrate with the existing analytic expressions for self-inductance, mutual inductance, and capacitance. The model is in good agreement with the experimental measurements and full-wave simulations. Exploiting the circuit model has made it possible to predict accurately the resonance frequency of the proposed structures and thus, quick and accurate process of designing THz device from artificial metamaterials is offered.

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