Abstracts

An efficient energetic variational principle for modeling one-port lossy gyrotropic YIG straight-edge resonators

I. Huynen, B. Stockbroeckx and G. Verstraeten. "An efficient energetic variational principle for modeling one-port lossy gyrotropic YIG straight-edge resonators." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 932-939.

This paper presents a new variational principle for the design of one-port gyrotropic magnetostatic-wave (MSW) resonators. We first prove the stationary character of the magnetic energy in the case of a resonator containing lossy gyrotropic media and supporting microwave MSW's. We then show that the variational expression may be successfully used for calculating the input reflection coefficient of a planar multilayered MSW straight-edge resonator (SER). Results obtained using the variational formulation are validated by experiment carried out at X-band. Hence, the resulting model is an efficient tool for designing low-noise wide-band yttrium-iron-garnet (YIG) tuned oscillators.

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