Abstracts

Magnetically Tunable Band-Stop Filters

G.L. Matthaei. "Magnetically Tunable Band-Stop Filters." 1965 Transactions on Microwave Theory and Techniques 13.2 (Mar. 1965 [T-MTT]): 203-212.

Techniques for the design of magnetically tunable band-stop filters using ferrimagnetic garnet resonators (such as yttrium-iron-garnet spheres) are presented. Design for prescribed response, starting from a low-pass lumped-element prototype filter is outlined. The filter structure consists of a strip line or waveguide with garnet spheres mounted at intervals of approximately a one-quarter-wavelength or three-quarters-wavelength, at the center of the tuning range. Tuning is achieved by varying a biasing magnetic field. Techniques for enhancing the coupling to the garnet-sphere resonators are discussed, and the results of four trial designs which verify the theory are presented. The band-stop filter techniques are shown to also provide a very simple means for measuring the ferrimagnetic resonance linewidth Delta/H of garnet spheres.

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