Abstracts

Complex Gyrator Circuit of an Evanescent-Mode E-Plane Junction Circulator Using H-Plane Turnstile Resonators

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The E-plane circulator is of considerable practical interest but its development has lagged somewhat compared to that of the more common H-plane device. The purpose of this paper is to experimentally investigate the eigenvalue problem and the complex gyrator circuit of an E-plane evanescent-mode junction loaded with one or two H-plane turnstile ferrite resonators symmetrically coupled by three standard rectangular waveguides. The condition for which the eigenvalues of the demagnetized junction are in antiphase has been met with the physical variables at hand, but the more important one for which they are also commensurate has not. A transformer coupled device using quarter-wave-long impedance sections at each port is also described. Its frequency coincides with the even solution of two coupled resonators.

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