Abstracts

Slope Parameter and Q of Radial Resonators (Correspondence)

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A radial resonator, Fig. 1, has proved useful, e.g., in filter constructions of coaxial parametric amplifiers. As a band rejection filter in a coaxial line, the radial resonator lies in antiresonance. Thus, it opens up the outer conductor efficiently, and power at this frequency band is reflected back. For filter design purposes, it maybe useful to know what are the slope parameter and the Q of the resonator, In the following, a formula for the characteristic impedance of the equivalent uniform TEM short-circuited lambda/4-resonator is derived, whose slope factor is the same as that of the radial antiresonant line. In design work, the radial line can be replaced by this lambda/4-line around the center frequency. A formula for the Q of the resonator is also derived.

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