Abstracts

The Variational Treatment of Thick Interacting Inductive Irises

T.E. Rozzi. "The Variational Treatment of Thick Interacting Inductive Irises." 1973 Transactions on Microwave Theory and Techniques 21.2 (Feb. 1973 [T-MTT]): 82-88.

The problem of two thick interacting inductive irises in waveguide is treated with a variational approach. Using the appropriate Green's functions in the continuity equations of the transverse magnetic fields yields two coupled integral equations for the magnetic currents on the apertures. Solving one equation by Fourier expansion and introducing in the remaining equation, a variational expression for the driving-point admittance is obtained. This is treated with a Rayleigh-Ritz procedure and matrix methods, avoiding the explicit computation of field amplitudes. The analysis is carried out in terms of an eigenmode expansion, as well as in terms of an expansion a la Schwinger on the aperture and the features of the two methods are contrasted. In spite of its somewhat greater mathematical complexity, the latter generally provides a superior solution for a given order of the trial field. In both cases the solutions are very accurate, uniformly convergent to their common limit value, and require manipulations with small-order matrices only. The agreement with the experiment is excellent.

❑ Return to main document.