Abstracts

Explicit eigenvalue approach to the efficient determination of the hybrid spectrum of ferrite-loaded circular waveguide

Finding many higher modes in ferrite loaded waveguide becomes mandatory when dealing with discontinuities in accurate component design. It is well known, however, that this is a very difficult task in practice. In this contribution we report a novel approach to this problem based on the explicit eigenvalue formulation of the vector telegrapher's equations applied to the anisotropic uniform waveguide and discretized by using the actual modes taken at cut-off as an expanding set. Theoretical results are compared with existing ones for the case of longitudinally magnetized fully and partially loaded waveguide with very good agreement. The resulting algorithm is compact and it requires extremely low computational effort for evaluating as many modal characteristics and vector fields as required.

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