Abstracts

Multimode Equivalent Network Representation for H- and E-Plane Uniform Bends in Rectangular Waveguide

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Uniform bends in rectangular waveguides are frequently used components in many microwave subsystems both for ground and space applications. Their accurate and efficient full-wave characterization is therefore required for the development of modern CAD tools to analyze and design complex waveguide structures. In this paper we describe new multimode network representations for both H- and E-plane uniform bends in terms of impedance and admittance multimode coupling matrices, respectively. The key element of the network is the transition from the straight waveguide to the curved waveguide. The relevant multimode equivalent network representation is obtained following a simple procedure that has already been used with success for other types of junctions involving straight waveguides. The convergency properties of the method are discussed, and comparisons between our simulations and theoretical and experimental data are presented, indicating that the approach proposed is at the same time accurate and computationally very efficient.

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