Abstracts

The complete set of dyadic Green's functions for the parallel-plate chirowaveguide and the application to the coaxial-probe excitation method

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The complete set of four spatial-domain electromagnetic dyadic Green's functions are rigorously derived for the parallel-plate chirowaveguide. These dyadic Green's functions are presented in the cylindrical coordinates, which are found to facilitate numerical calculations. An electric-field integral equation for the coaxial-probe excitation problem is formulated using the dyadic Green's functions, and the moment-method solution is sought. The probe admittance and current distribution along the probe at different chiral levels are obtained. Results show that a substantially higher admittance level is obtained, but the admittance bandwidth decreases with the chiral parameter. Stopbands at which no net power input into the waveguide are observed. This characteristic is found to have no match in the nonchiral waveguide. The computed current distribution along the probe shows a greater current magnitude than that of the nonchiral waveguide. The validity of the numerical solution is checked with the measured values for the nonchiral case.

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