Abstracts

A Galerkin moment method for the analysis of an insulated antenna in a dissipative dielectric medium

A Galerkin moment method is employed to solve the problem of a dielectric-coated dipole antenna in a dissipative medium. Piecewise sinusoids are used as basis and testing functions. The dielectric coating is modeled by equivalent-volume polarization currents, which are simply related to the conduction current distribution. No additional unknowns are introduced, and the size of the moment-method matrix is the same as that for bare antennas. Exact and approximate formulas for the near electric field are derived. The computed results exhibit excellent agreement with those previously published for a symmetric, as well as an asymmetric insulated dipole. Compared to its existing competitors, the new method appears to be more general and computationally efficient.

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