Abstracts

On Determining the Capacitances of Shielded Multiconductor Transmission Lines

P.C. Chestnut. "On Determining the Capacitances of Shielded Multiconductor Transmission Lines." 1969 Transactions on Microwave Theory and Techniques 17.10 (Oct. 1969 [T-MTT]): 734-745.

A numerical method for computing the capacitances of n conductors located inside a grounded rectangle is presented. The method is based on an integral equation for the charge densities on the conductors with a Green's function as kernel. The integral equation is solved numerically by replacing the integral with a finite sum, using a Gaussian quadrature formula. The feasibility of the method depends on each conductor having a simple analytical description (circle, ellipsoid, straight line, etc.). As an illustration, graphs are shown giving the dimensions of an offset pair of zero-thickness strips versus coupling coefficient for a 50-ohm transmission line for various sizes of the grounded rectangle.

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