Abstracts

Coupled Circular Cylindrical Rods Between Parallel Ground Planes

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The normalized self and mutual capacitances of periodic, circular cylindrical rods located between parallel ground planes are presented graphically. The capacitances were determined by solving the appropriate integral equation by numerical methods. Charts of self and mutual capacitance are given for rod diameter-to-ground plane spacing ratios varying from 0.05 to 0.8 and for very small to very large spacings between rods. Accuracy of the data is believed to be generally better than 2 per cent for the normalized mutual capacitance and generally better than 1 per cent for the normalized self capacitance. An approximate design method is also presented that permits using the data to synthesize filters (such as interdigital and comb-line filters) that require rods of nonequal diameters and spacings. An example of the design method is given, and a filter is constructed from the resulting data. The filter response was measured and found to agree closely with that called for by the theory.

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