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Method of Moments Solution by Using Sinc-Type Basis Functions for the Scattering from a Finite Number of Conducting Strip Gratings

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Abstract: A numerical method of moments (MoM) solution is applied to the electromagnetic scattering from a periodic finite conducting strip array when the incident electromagnetic plane wave E and H polarizations illuminate the grating. For such grating strip geometry, we deal with singular integral equations arising from Neumann and Dirichlet boundary conditions. MoM is applied using band-limited sinc functions as basis and testing functions. The Galerkin approach is followed in MoM formulation. The properties of the sinc function, with the infinite integral, are exploited in the computations of the main matrix elements. Also, the error in our approach goes to zero with increasing bandwidth or lower sampling rate. Results of our formulation are given as surface current densities and far field scattered data. Our data is also compared with previous results available in the literature.

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