Abstracts

A Theoretical Analysis of Discrete Reflecting Beam Waveguide with Parabolic Cylindrical Reflectors

M. Suzuki, M. Kamimura and S. Fujiki. "A Theoretical Analysis of Discrete Reflecting Beam Waveguide with Parabolic Cylindrical Reflectors." 1970 Transactions on Microwave Theory and Techniques 18.7 (Jul. 1970 [T-MTT]): 338-347.

A discrete reflecting beam waveguide with parabolic cylindrical reflectors, proposed by M. Kamimura, is theoretically analyzed. Electric field elementary waves on the reflector and the exciting primary electric field from the launcher are represented in the elliptic cylindrical coordinate system, and boundary conditions on the reflector are introduced to derive simultaneous integral equations regarding the reflector current. By solving these integral equations approximately, the integral representation of the secondary electric field in the beam waveguide is obtained, and poles and residues of the integrand are calculated to obtain the propagation constant of the beam waveguide and beam waveguide modes. The beam waveguide mode reflected toward the transmitting side when an obstacle is placed in the beam waveguide is obtained.

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