Abstracts

Scattering of Surface Waves by Discontinuities on a Unidirectionally Conducting Screen

S.R. Seshadri. "Scattering of Surface Waves by Discontinuities on a Unidirectionally Conducting Screen." 1962 Transactions on Microwave Theory and Techniques 10.5 (Sep. 1962 [T-MTT]): 367-375.

It is shown that a plane screen consisting of closely-spaced parallel wires which are separated from one another and which are such that the radius of the wires and the spacing between them are small in comparison to wavelength, can support a surface wave, the spread of whose field components depends only on the angle which the direction of propagation makes with the direction of the wires. The problem of radiation from a discontinuity in such a semi-infinite waveguide is studied for the following three types of discontinuities: 1) when the waveguide terminates in empty space, 2) when it terminates at another such semi-infinite waveguide having different propagation characteristics, and 3) when it terminates at a perfectly conducting half-plane. In each case, the power reflection coefficient, where applicable the power transmission coefficient, the loss of power due to radiation, and its angular distribution are evaluated. The motivation for this investigation is briefly indicated.

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