Abstracts

Variational Treatment of the Diffraction at the Facet of d.h. Lasers and of Dielectric Millimeter Wave Antennas

T.E. Rozzi and G.H. in't Veld. "Variational Treatment of the Diffraction at the Facet of d.h. Lasers and of Dielectric Millimeter Wave Antennas." 1980 Transactions on Microwave Theory and Techniques 28.2 (Feb. 1980 [T-MTT]): 61-73.

This paper presents an accurate variational treatment of the diffraction of TE and TM waves by an abrupt transverse discontinuity in a dielectric waveguide, such as the mirror of a double heterostructure (d.h.) injection laser, or the end plane of a dielectric slab antenna for millimeter waves, under the assumption of small aspect ratio. A matrix representation of the Green's function is derived analytically, in the limit of small efective frequency, for the TE case. For the TM case, the complication introduced by the discontinuity of the transverse electric field across the dielectric interface is discussed in detail. The numerical examples refer to the d.h. laser configuration. Both transverse directions (perpendicular as well as parallel) to the junction are studied. The effect of mode coupling at the mirror of a LOC laser as well as the effect of an antireflection coating are investigated.

❑ Return to main document.