

# Abstracts

## Excitation and Scattering of Modes on a Dielectric or Optical Fiber

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A.W. Snyder. "Excitation and Scattering of Modes on a Dielectric or Optical Fiber." 1969 *Transactions on Microwave Theory and Techniques* 17.12 (Dec. 1969 [T-MTT]): 1138-1144.

A technique similar to that of Kirchhoff is used to obtain an analytic expression for mode launching on a semi-infinite rod. The approximation is quasi-optical and only valid for small angles of incidence  $|\theta|$ . When  $|\theta| = 0$  only  $HE_{1M}$  modes are excited; however, for  $|\theta| \ll 1$  many modes can be launched. The effect on  $HE_{11}$  mode propagation of small imperfections in a dielectric waveguide is analyzed. At the frequency of interest for optical communication (cutoff for the  $TM_{01}$  mode) the radiated power is 160 times larger than that scattered into the  $HE_{11}$  mode.

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