Abstracts

Image theory for reflected TE/TM wave in waveguide

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The image principle is extended to the time-harmonic problem of TE/TM wave propagation and reflection in a waveguide. The fictitious image generating the reflected field is derived with the aid of Heaviside operational calculus and a transmission-line model of the waveguide. The operational calculus reveals that the image of a point-like source in front of the waveguide discontinuity is another point-like source in the mirror-image position and a line source extending from the mirror-image position to infinity. The image derived with operational calculus turns out to be independent of the waveguide's transverse geometry.

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