

Boundary Conditions

Electrical Engineering

Which field components stay continuous at an interface, and which jump.

Two interfaces, four field components, one set of rules.

Component	Dielectric boundary	Good conductor
Tangential E	Continuous	Zero at the surface
Normal D	Jumps by surface charge	Equals surface charge
Tangential H	Continuous	Equals surface current
Normal B	Continuous	Zero inside

Forcing these conditions at an interface is what produces Snell's law, the Fresnel coefficients and every waveguide mode.