PHYS 436: Lecture 16

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E&M Waves in Conductors

Recall that

$$\vec{E} = \hat{x} E_0 \exp(-kz) \cos(kz - \omega t + \delta_E) \tag{1}$$

$$\vec{B} = \hat{y} B_0 \exp(-kz) \cos(kz - \omega t + \delta_E + \phi) \tag{2}$$

Reflection inside a conductor is same as a linear medium, with the boundary conditions:

$$E_1^{\parallel} = E_2^{\parallel}$$
$$\frac{1}{\mu_1} B_1^{\parallel} = \frac{1}{\mu_2} B_2^{\parallel}$$

But the $\tilde{k}$ value changes.