

# Maxwell's Equation

$$\int_{S_0} D_n dS = Q(t)$$

$$\int_{S_0} B_n dS = 0$$

$$\int_{C_0} \mathbf{E} \cdot d\mathbf{r} = -\frac{d}{dt} \int_S B_n dS$$

$$\int_{C_0} \mathbf{H} \cdot d\mathbf{r} = -\frac{d}{dt} \int_S D_n dS + I(t)$$

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$$\operatorname{div} \mathbf{D}(\mathbf{x}, t) = \rho(\mathbf{x}, t)$$

$$\operatorname{div} \mathbf{B}(\mathbf{x}, t) = 0$$

$$\operatorname{rot} \mathbf{E}(\mathbf{x}, t) = -\frac{\partial \mathbf{B}(\mathbf{x}, t)}{\partial t}$$

$$\operatorname{rot} \mathbf{H}(\mathbf{x}, t) = \frac{\partial \mathbf{D}(\mathbf{x}, t)}{\partial t} + \mathbf{i}(\mathbf{x}, t)$$