Displacement Current

Real Current: Charge Q passes through area A in time t:

$$I = \frac{dQ}{dt}$$

Displacement Current: Electric flux through area A changes in time

$$I_D = \varepsilon_0 \frac{d\Phi_E}{dt}$$

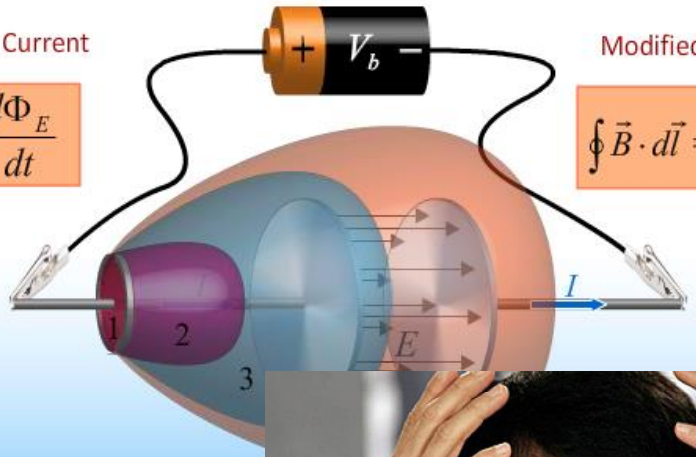
DISPLACEMENT CURRENT and EM WAVES

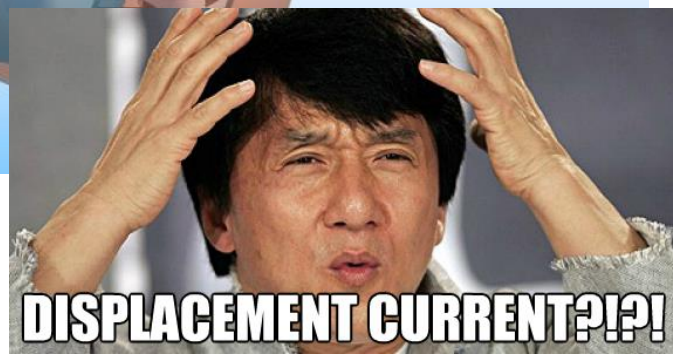
Displacement Current

$$I_D = \varepsilon_o \frac{d\Phi_E}{dt}$$

Modified Ampere's Law

$$\oint \vec{B} \cdot d\vec{l} = \mu_o (I + I_D)$$





Faraday's Law

$$\oint \vec{E} \cdot d\vec{l} = -\frac{d}{dt} \int \vec{B} \cdot d\vec{A}$$

Modified Ampere's Law

$$\oint \vec{B} \cdot d\vec{l} = \mu_o \varepsilon_o \frac{d}{dt} \int \vec{E} \cdot d\vec{A}$$

Free space