

DISPLACEMENT CURRENT

For a capacitor consisting of two parallel plates with uniform charge density σ , the electric field E between the plates is given by

$$E = \frac{\sigma}{\epsilon_0} = \frac{Q}{\epsilon_0 A}$$

Equivalent current density J_D is given

as

$$J_D = \epsilon_0 \frac{dE}{dt}$$

Evening

Displacement current I_D is given

$$I_D = J_D A$$

$$= \epsilon_0 \left(\frac{dE}{dt} \right) A$$

Evening

