Answer on Question #72104-Physics-Electromagnetism

A capacitor has been charge by a dc source. What is the magnitude conductance and displacement current when it is fully charged?

Answer

Electric flux through plates of capacitor is

$$\Phi = \frac{q}{\varepsilon_0}$$

$q = const$ when it is fully charged.

Displacement current is

$$I_D = \varepsilon_0 \frac{d}{dt} \Phi = \varepsilon_0 \frac{d}{dt}\left(\frac{q}{\varepsilon_0}\right) = 0$$

Conductance current is

$$I = C\frac{dV}{dt} = 0.$$

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