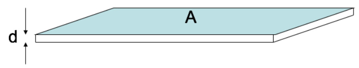
A VERY thin slab of thickness d and area A has volume charge density $\rho = Q/V$. Because it's so thin, we may think of it as a surface charge density $\sigma = Q/A$.

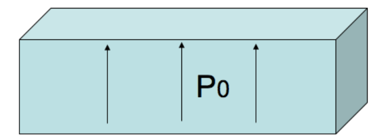


The relation between ρ and σ is:

A. $\sigma = \rho$
B. $\sigma = \rho d$
C. $\sigma = \rho/d$
D. $\sigma = V\rho$
E. $\sigma = \rho/V$

A dielectric slab (top area A, height h) has been polarized, with $\mathbf{P} = P_0$ in the $+z$ direction. What is the surface charge density, σ_b, on the bottom surface?

A. 0
B. $-P_0$
C. P_0
D. P_0Ah
E. P_0A



Are ρ_b and σ_b due to real charges?

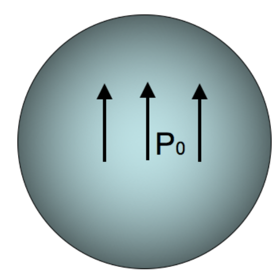
A. Of course not! They are as fictitious as it gets!
B. Of course they are! They are as real as it gets!
C. I have no idea

A dielectric sphere is uniformly polarized,

$$\mathbf{P} = +P_0\hat{z}$$

What is the surface charge density?

A. 0
B. Non-zero Constant
C. constant*$\sin\theta$
D. constant*$\cos\theta$
E. ??

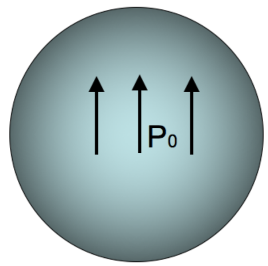


A dielectric sphere is uniformly polarized,

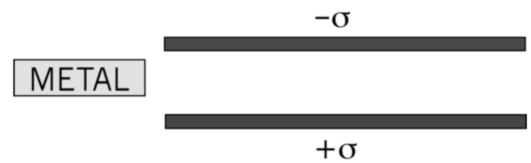
$$\mathbf{P} = +P_0\hat{z}$$

What is the volume charge density?

A. 0
B. Non-zero Constant
C. Depends on r, but not θ
D. Depends on θ, but not r
E. ?

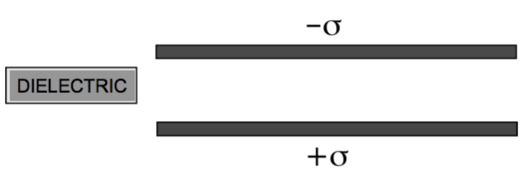


If we push this conductor inside the isolated capacitor, will it be drawn into the capacitor or repelled?



A. It gets sucked into the capacitor
B. It gets pushed out from the capacitor
C. I just don't know.

If we push this dielectric inside the isolated capacitor, will it be drawn into the capacitor or repelled?



A. It gets sucked into the capacitor
B. It gets pushed out from the capacitor
C. I just don't know.