

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

ANNOUNCEMENTS

- Exam 2 (Wednesday, November 7th 7-9pm)
- Covers through Homework 9 (solutions posted after class)
- "Comprehensive" exam (need to remember old stuff)
- 1 sheet of your own notes; old exam and formula sheet will be posted

WHAT'S ON EXAM 2?

- Using Legendre polynomials and separation of variables in spherical coordinates, solve for the potential and distribution of charge in a boundary value problem
- Using the multipole expansion, find the approximate form of the potential for a distribution of charge
- Determine the bound charge in a material with a given polarization
- Find the electric potential for a 1D Laplace problem and explain how you would determine it using the method of relaxation
- (BONUS) Solve a 3D Laplace problem

If you put a polarizable material (a dielectric) in an external field \mathbf{E}_e , it polarizes, adding a new field, \mathbf{E}_p (from the bound charges). These superpose, making a total field, \mathbf{E}_T . What is the vector equation relating these three fields?

A. $\mathbf{E}_T + \mathbf{E}_e + \mathbf{E}_p = 0$

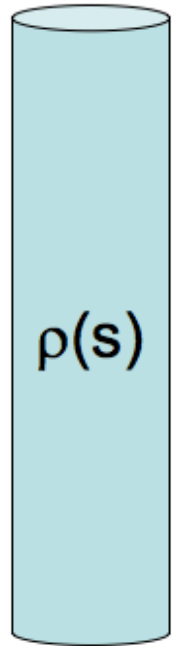
B. $\mathbf{E}_T = \mathbf{E}_e - \mathbf{E}_p$

C. $\mathbf{E}_T = \mathbf{E}_e + \mathbf{E}_p$

D. $\mathbf{E}_T = -\mathbf{E}_e + \mathbf{E}_p$

E. Something else

A solid non-conducting dielectric rod has been injected ("doped") with a fixed, known charge distribution $\rho(s)$. (The material responds, polarizing internally.)



When computing D in the rod, do you treat this $\rho(s)$ as the "free charges" or "bound charges"?

- A. "free charge"
- B. "bound charge"
- C. Neither of these - $\rho(s)$ is some combination of free and bound
- D. Something else.