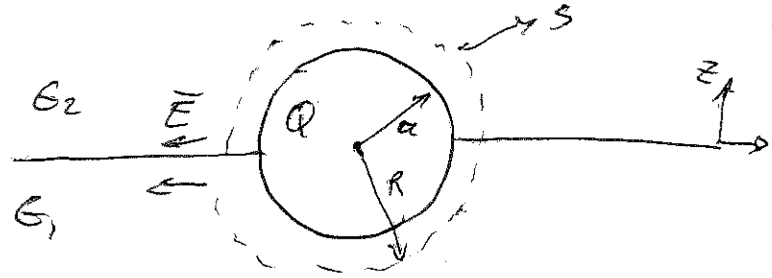

Usando la ley de Gauss para una superficie esférica:

$$\oint_s \bar{D}\cdot d\bar{s} = Q_{enc} = Q$$

Dado que el campo E es tangencial en la frontera entre dieléctricos: $E_1 = E_2 = E_r$

$$\oint_s \bar{D}\cdot d\bar{s} = \epsilon_1 E_r \left(\frac{4\pi R^2}{2}\right) + \epsilon_2 E_r \left(\frac{4\pi R^2}{2}\right)$$

$$= E_r (2\pi R^2)(\epsilon_1+\epsilon_2) = Q$$

$$\bar{E} = \begin{cases} \dfrac{Q}{2\pi(\epsilon_1+\epsilon_2)R^2}\hat{r} & R>a \\ 0 & R<a \end{cases}$$

$$\bar{D} = \frac{Q}{2\pi R^2}\,\frac{\epsilon_1}{\epsilon_1+\epsilon_2}\hat{r} \qquad z<0,\ R>a$$

$$\bar{D} = \frac{Q}{2\pi R^2}\,\frac{\epsilon_2}{\epsilon_1+\epsilon_2}\hat{r} \qquad z>0,\ R>a$$

$$\bar{P} = \bar{D} - \epsilon_0\bar{E} = \frac{Q}{2\pi R^2}\,\frac{\epsilon_1-\epsilon_0}{\epsilon_1+\epsilon_2} \qquad z<0,\ R>a$$

$$\bar{P} = \frac{Q}{2\pi R^2}\,\frac{\epsilon_2-\epsilon_0}{\epsilon_1+\epsilon_2} \qquad z>0,\ R>a$$