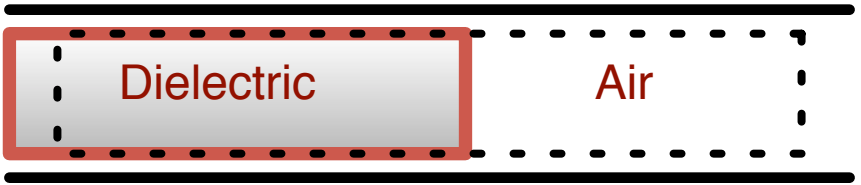

A square parallel plate capacitor of side L and separation d has a potential difference of V_0. The capacitor is half filled with a dielectric with constant ϵ, and half filled with air $\epsilon \simeq 1$.

The dielectric is drawn into the air to lower its energy. Using the stress tensor and the dashed surface shown below, show that the force on the dielectric is

$$F^x = \frac{LV_0^2}{2d}(\epsilon - 1)$$