

Exercise 3.2-3 Electronic Polarization

Illustration

- Look at an atom with atomic number z
- How large is the distance d between the (center of gravity) of the positive and negative charges for reasonable field strengths and atomic numbers, e.g. the combinations of
 - 1 kV/cm
 - 100 kV/cm
 - 10 MV/cm
 - , the last one being about the ultimate limit for the best dielectrics there are,
- and
- $z = 1$ (H, Hydrogen)
 - $z = 50$ (Sn, (= tin), ...)
 - $z = 100$ (?)
- Calculate the "spring constant" and from that the resonance frequency of the "electron cloud" (assume the nucleus to be fixed in space).



Link to the [solution](#)