

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](#)