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 "elctron cloud" (assume the nucleus to be fixed in space).

Link to the solution