Electrostatics

- **Coulomb's Law.** Two electric charges, q_1 and q_2 , at distance r, act onto each other with *electrostatic force* given by Coulomb's formula:

$$F = \frac{kq_1q_2}{r^2}; \qquad k = 9 \cdot 10^9 \frac{Nm^2}{C^2}$$

Here k is called Coulomb's constant . SI unit of electric charge is 1 Coulomb (1C), which is a very large charge.

- Electric charges can be positive or negative.
- Positive force corresponds to repulsion. So, same-sign charges repel, opposite attract.

Homework

Problem 1

In various scientific papers, it was demonstrated that insects (e.g. bees) as well as spiders use electrostatics to function (mostly to eat). Use Internet to find out more on any of those stories, sketch a picture and explain the science in a couple of sentences.

Problem 2

Two identical pieces of dust at distance d=5cm repel electrostatically with the force F=10^{-6} N. Find the electric charge on each of them.