

## Answer on Question #82538, Physics / Electromagnetism

### Question:

What is the electrostatic force on all the electrons in one of your eyes due to all of the electrons in your other eye? Why don't you notice this force?

### Solution:

Let's assume that the eye volume equals to  $3 \text{ cm}^3$  and it consists mainly from water; then the number

of molecules is  $n = \frac{3}{18} 6 \cdot 10^{23} = 10^{23}$  and the proper electrons charge equals to

$q = 10^{23} \cdot 1.6 \cdot 10^{-19} = 0.16 \cdot 10^6 \text{ (K)}$ , and according to Coulomb's law the force is

$$f = \frac{9 \cdot 10^9 \cdot 0.16^2 \cdot 10^{12}}{25 \cdot 10^{-4}} = 3 \cdot 10^{23} \text{ (N)}.$$

We don't feel this force because besides electrons there are positive protons and the repulsion force is compensated by the attraction force.

### The answer:

$$f = 3 \cdot 10^{23} \text{ N}$$

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