

## ΗΛΕΚΤΡΙΚΕΣ ΚΑΙ ΒΑΡΥΤΙΚΕΣ ΔΥΝΑΜΕΙΣ

$$\text{ηλεκτρικη δυναμη } F_{q_1q_2} = k \frac{q_1q_2}{r_{12}^2}$$

$$\text{βαρυτικη δυναμη } F_{m_1m_2} = G \frac{m_1m_2}{r_{12}^2}$$

$$k = 8.9875 \times 10^9 \text{ N(m/C)}^2$$

$$G = 6.6726 \times 10^{-11} \text{ N(m/kg)}^2$$

$$m_e = 9.1094 \times 10^{-31} \text{ kg}$$

$$m_p = 1.6726 \times 10^{-27} \text{ kg}$$

$$q_e = q_p = 1.6022 \times 10^{-19} \text{ C}$$

$$\frac{F_{qq}}{F_{mm}} = \frac{k}{G} \left( \frac{q}{m} \right)^2 = 1.3469 \times 10^{20} \left( \frac{q}{m} \right)^2$$

$$\frac{F_{q_eq_e}}{F_{m_em_e}} = 1.3469 \times 10^{44} \left( \frac{1.6022}{9.1094} \right)^2 = 3.094 \times 10^{42} \approx \mathbf{3 \times 10^{42}}$$

$$\frac{F_{q_pq_p}}{F_{m_pm_p}} = 3.094 \times 10^{42} \left( \frac{m_e}{m_p} \right)^2 = 3.094 \times 10^{34} \left( \frac{9.1094}{1.6726} \right)^2 = 9.1773 \times 10^{35} \approx \mathbf{10^{36}}$$