Griffiths

2.1. Calculate ratio of gravitational attraction to electric repulsion between 2 stationary electrons.

$$F_{grav} = \frac{G m m}{r^2} = \frac{6.67\times10^{-11}\left(m^3 kg^{-1} s^{-2}\right)\left(9.1\times10^{-31}\right)^2 kg^2}{r^2 m^2}$$

$$= \frac{6.67\times10^{-11}\times 81\times10^{-62}}{r^2} m\, kg\, s^{-2}$$

$$F_{coulomb} = \frac{1}{4\pi\varepsilon_0}\frac{q_1 q_2}{r^2} = 9\times10^9 \frac{q_e^2}{r^2} kg\, m\, s^{-2}$$

$$q_e = 1.6\times10^{-19}$$

$$\Rightarrow F_{coulomb} \approx \frac{9\times10^9 (1.6)^2 10^{-38}}{r^2} kg\, m\, s^{-2}$$

$$\frac{F_{grav}}{F_{coulomb}} = \frac{6.67\times10^{-11}\times81\times10^{-62}}{9\times10^9 (1.6)^2 10^{-38}} = \frac{540\times10^{-73}}{23\times10^{-29}} \approx \boxed{2.3\times10^{-43}}$$