Answer on Question #75148-Physics-Electromagnetism

A charged sphere of mass 2g is freely suspended in an electric field vector 5*100000j N/C.

Calculate the number of excess charged particles in the sphere

Solution

For the equilibrium:

$$mg = qE$$

The charge of sphere is

$$q = ne.$$

The number of excess charged particles in the sphere is

$$n = \frac{mg}{eE}$$

$$n = \frac{(0.002)(9.8)}{(1.6 \cdot 10^{-19})(500000)} = 245000000000.$$

Answer: 245000000000.