

Exercise 1

In a Millikan experiment with a plate separation of 1.6 cm, the charge on an oil drop of mass 1.0×10^{-15} kg could be altered by switching on and off the radiation. In each case, the droplet could be suspended motionless in the chamber by application of voltage between the plates given in the table below.

Case Voltage

1 391.5

2 407.8

3 376.4

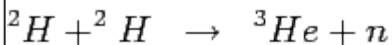
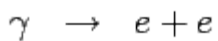
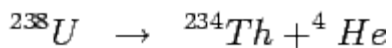
4 337.5

5 362.5

Using the above data estimate the least quantum of charge on the droplet.

Exercise 2

Which of the following equations are inconsistent with charge conservation ?



Exercise 3

Four point charges, each $+4\text{nC}$ are placed one each at the four corners of a square of side 0.12m . Find the force on one of the charges due to three others.

[Ans. : 1.9×10^{-5} along line joining the particular charge to the charge at the diagonally opposite corner, directed outward from the square.]

Exercise 4

Draw field lines and show the neutral point for a charge $+4Q$ located at $(1, 0)$ and $-Q$ located at $(-1, 0)$