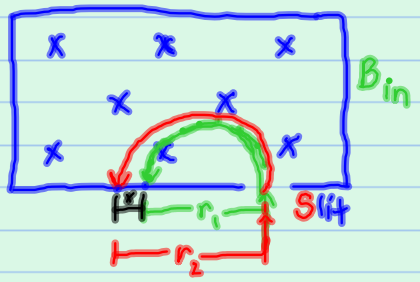
Ex. 19.6 p 600

Mass Spectrometer



$B = .1\,T$

$v_1 = 1 \times 10^6 \frac{m}{s}$ both

$m_1 = 1.67 \times 10^{-27}\,kg$

$m_2 = 3.34 \times 10^{-27}\,kg$

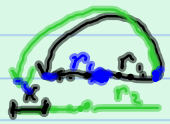
neutral atom $\#p^+ = \#e^-$

ion $\#p^+ \neq \#e^-$ (not neutral)

2 singly ionized atoms

$q = 1.6 \times 10^{-19}\,C$

① $r_1 = \frac{m_1 v_1}{qB}$



② $r_2 = \frac{m_2 v_1}{qB}$

$2r_2 - 2r_1 = x$

③ $x = 2r_2 - 2r_1 = \_\_\_\_ m$

#32 U^{235} U^{238}

$235\ amu \left| \frac{1.67}{1\ amu} \right| \frac{1.66 \times 10^{-27}\,kg}{} = \_\_\_\_ kg$

amu atomic mass unit

$1\ amu = 1.67 \times 10^{-27}\,kg$

rt m - carry out to 3 dec.