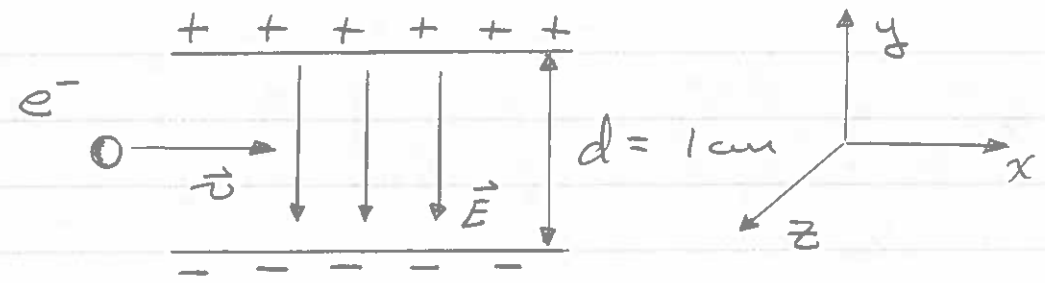


$v = 1\times10^7$ m/s and $\Delta V = 200$ V between the plates

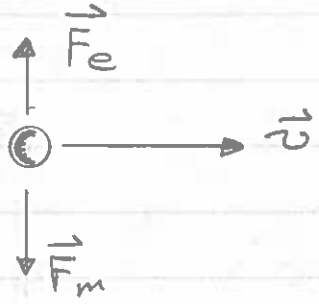
The electric field between the plates is uniform and is

$$\vec{E} = -\frac{\Delta V}{d}\hat{j} = -2\times10^4 \frac{V}{m}\hat{j}$$

So, electric force is $\vec{F}_e = q\vec{E} = -e\vec{E}$

$$= 3.2\times10^{-15}\hat{j}\ N$$

So, for no deflection,



$$\vec{F}_m = -\vec{F}_e = q\vec{v}\times\vec{B} = -e\vec{v}\times\vec{B}$$

RHR $\Rightarrow$ $\vec{B}$ must point in $-z$ direction and

$$|\vec{F}_e| = evB \Rightarrow B = \frac{|\vec{F}_e|}{ev} = 0.002\,T$$

$\therefore$ $\vec{B} = -0.002\hat{k}\ T$

(or into the page)