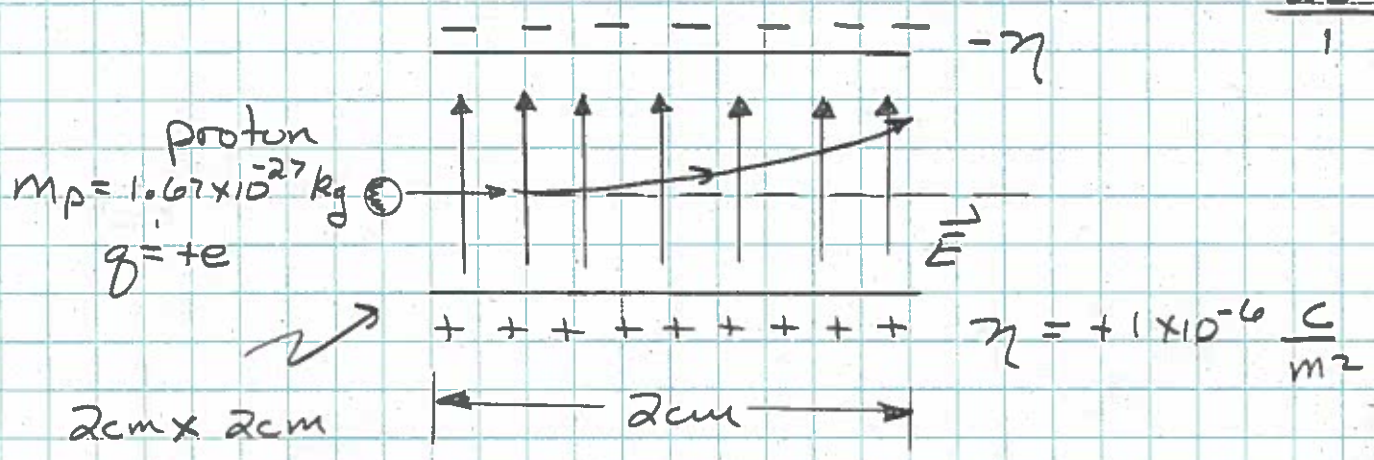


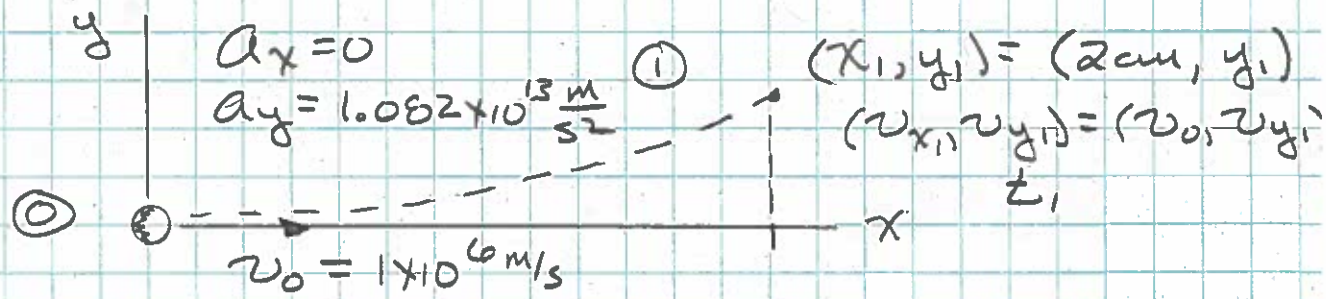
Field Strength for parallel plate capacitor:

$$E = \frac{\eta}{\varepsilon_0} = 1.13\times10^{5}\ N/C$$

$\vec{F} = q\vec{E}$ so $F = eE = 1.808\times10^{-14}\ N$ (up)

and $a = \frac{F}{m_p} = 1.082\times10^{13}\ m/s^2$ (up)

Now, constant acceleration kinematics:



$(x_0, y_0) = 0$

$(v_{x0}, v_{y0}) = (v_0, 0)$

$t_0 = 0$

x-motion:

$$x_1 = x_0 + v_{x0}\Delta t + \frac{1}{2}a_x\Delta t^2$$

$$x_1 = v_0 t_1$$

$$t_1 = \frac{x_1}{v_0} = 2\times10^{-8}\ s$$

Now, y-motion:

$$y_1 = y_0 + v_{y0}\Delta t + \frac{1}{2}a_y\Delta t^2$$

$$y_1 = \frac{1}{2}a_y t_1^2 = \underline{2.164\times10^{-3}\ m} = \underline{2.164\ mm}$$