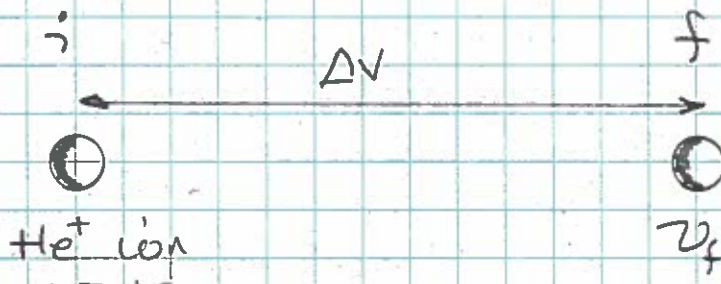

He^+ ion
$q = +e$
$m = 4u$
$v_i = 0$

$v_f = 2 \times 10^6$ m/s

Conserve energy: $\Delta E_{mech} = \Delta K + \Delta U = W_{nc} = 0$

$$\Delta U = q\Delta V = e\Delta V$$

$$\frac{1}{2}m(v_f^2 - v_i^2) + e\Delta V = 0$$

$$\Delta V = -\frac{mv_f^2}{2e} = -83{,}000\text{ V}$$

$m = 4u = 6.64 \times 10^{-27}$ kg