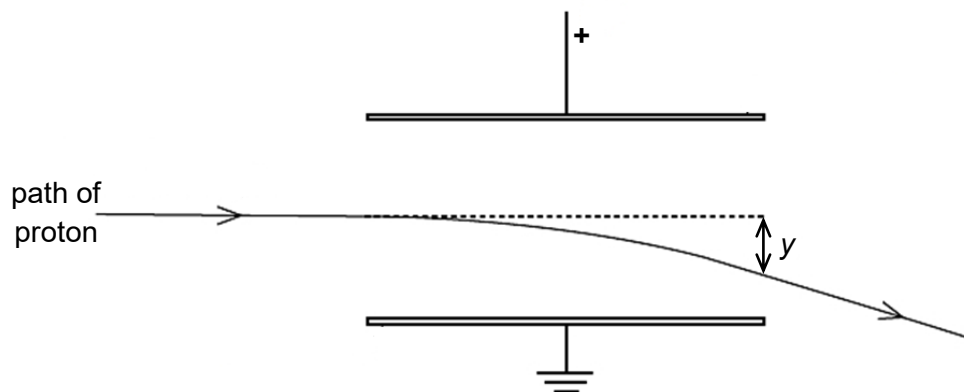


- 22 A proton with kinetic energy K is directed horizontally between two charged horizontal plates and exits with a vertical displacement y .



An alpha particle (i.e. a ${}^4_2\text{He}$ nucleus) with kinetic energy $4K$ is now directed horizontally between the plates.

What is the alpha particle's vertical displacement as it exits the plates?
(Ignore the effects of gravity.)

- A** $\frac{1}{4}y$ **B** $\frac{1}{2}y$ **C** y **D** $2y$