

For a c+ve particle, initially has c-ve z displacement  
 c-ve " " c+ve z "

Proved before  $\rightarrow$

In the case of c-ve particle,  
 at time  $> 0$

z velocity ( $V_z$ )  $> 0$

so new cross product =

$$\begin{pmatrix} V \\ 0 \\ 0 \\ V_z \end{pmatrix} \times \begin{pmatrix} B \\ B_x \\ 0 \\ 0 \end{pmatrix} \begin{matrix} 0 \cdot 0 - V_z \cdot 0 \\ -(B_x \cdot 0 \cdot 0 - V_z \cdot B_x) \\ (0 \cdot 0 - 0 \cdot B_x) \end{matrix}$$

$$\begin{aligned} & -(-V_z \cdot B_x) \\ & = V_z \cdot B_x \end{aligned}$$

so  $\vec{F}$  when  $F_{\text{mag}} = q (V_z \cdot B_x)$

if  $q$  negative,  $F_{\text{mag}}$  in negative y