. To get this velocity through we want

36 cont.

$$x(t_\ell) = 0 \Rightarrow \sin\frac{\omega \ell}{v_0} = 0 \Rightarrow \frac{\omega \ell}{v_0} = \pi$$

which gives $\frac{eB}{m}\frac{\ell}{v_0} = \pi$ or $\boxed{B = \frac{\pi m v_0}{e\ell}}$

Then $E = B v_0 \Rightarrow \boxed{E = \frac{\pi m v_0^2}{e\ell}}$

c) Let us now use these values of E & B $\Rightarrow$

$$z = -A\cos\delta + v_0 t + A\cos\left(\frac{v_0\pi}{\ell}t + \delta\right)$$

$$x = A\sin\delta - A\sin\left(\frac{v_0\pi}{\ell}t + \delta\right)$$

$$y = v_y^\circ t$$

$$\dot{z}(0) = v_z^\circ = v_0 - A\frac{v_0\pi}{\ell}\sin\delta$$

$$\dot{x}(0) = v_x^\circ = -A\frac{v_0\pi}{\ell}\cos\delta$$

$$\dot{y}(0) = v_y^\circ$$

Note that this choice also gives

$\left[1 - \cos\frac{\omega\ell}{v_0}\right] = 2$ so that we get maximum rejection with respect to $v_0 - v_z^\circ$ which is what we also want!