



$$V_x = V_0 \cos \alpha$$

$$V_y = V_0 \sin \alpha$$

$$V_x' = -V_x \Rightarrow \Delta V_x = -2V_x$$

$$\Rightarrow F_T = F_y$$

$$\frac{\Delta V_x}{\Delta t} m \cdot f = \frac{\Delta V_y}{\Delta t} \cdot m$$

$$\Rightarrow \Delta V_x f = \Delta V_y$$

$$-2V_0 \cos \alpha f = V_y' - V_y$$

$$V_y' = V_y - 2V_0 \cos \alpha f$$

$$\tan \beta = \frac{V_y'}{V_x} = \tan \alpha - 2f \quad \checkmark$$

$$V = \sqrt{V_x'^2 + V_y'^2} = \sqrt{V_0^2 \cos^2 \alpha + V_0^2 \sin^2 \alpha + 4V_0^2 \cos^2 \alpha f^2 - 4V_0^2 \sin \alpha \cos \alpha f} =$$

$$= V_0 \sqrt{1 + 4f \cos \alpha (f \cos \alpha - \sin \alpha)}$$