

## OBTENCIÓN DE "LA TERCERA FÓRMULA" DEL M.R.U.A.:

$$S = S_0 + V_0 t + \frac{1}{2} a t^2 \quad \left. \vphantom{S = S_0 + V_0 t + \frac{1}{2} a t^2} \right\} \text{ fórmulas del M.R.U.A.}$$

$$V = V_0 + at$$

$$t = \frac{V - V_0}{a}$$

$$S = S_0 + V_0 \cdot \left( \frac{V - V_0}{a} \right) + \frac{1}{2} a \cdot \left( \frac{V - V_0}{a} \right)^2$$

$$S = S_0 + \frac{V_0 \cdot V}{a} - \frac{V_0^2}{a} + \frac{1}{2} a \left( \frac{V^2 - 2V \cdot V_0 + V_0^2}{a^2} \right)$$

$$S = S_0 + \frac{V_0 V}{a} - \frac{V_0^2}{a} + \frac{1}{2} \frac{V^2}{a} - \frac{1}{2} \frac{2V \cdot V_0}{a} + \frac{1}{2} \frac{V_0^2}{a}$$

$$S = S_0 + \frac{V_0 V}{a} - \frac{V_0^2}{a} + \frac{1}{2} \frac{V^2}{a} - \frac{V \cdot V_0}{a} + \frac{1}{2} \frac{V_0^2}{a}$$

$$S = S_0 - \frac{V_0^2}{a} + \frac{1}{2} \frac{V^2}{a} + \frac{1}{2} \frac{V_0^2}{a}$$

$$S = S_0 - \frac{1}{2} \frac{V_0^2}{a} + \frac{1}{2} \frac{V^2}{a}$$

Si suponemos  $S_0 = 0$

$$S = \frac{-V_0^2 + V^2}{2a} \Rightarrow 2aS = -V_0^2 + V^2$$

Reordenando:

$$V_0^2 + 2aS = V^2$$

$$\boxed{V^2 = V_0^2 + 2aS}$$

**TERCERA FÓRMULA  
DEL M.R.U.A.**