

ANEXO: Cálculos de valores acotados

Valor más probable

$$\bar{p}_i = \bar{p}_{1i} + \bar{p}_{2i} = \bar{m}_1 \bar{v}_{1i} + \bar{m}_2 \bar{v}_{2i}$$

Error

$$\begin{aligned} \Delta p_i &= \Delta p_{1i} + \Delta p_{2i} = \bar{p}_{1i}(\varepsilon_{1m} + \varepsilon_{1vi}) + \bar{p}_{2i}(\varepsilon_{2m} + \varepsilon_{2vi}) \\ &= \bar{p}_{1i} \left(\frac{\Delta m}{\bar{m}_1} + \frac{\Delta v_{1i}}{\bar{v}_{1i}} \right) + \bar{p}_{2i} \left(\frac{\Delta m}{\bar{m}_2} + \frac{\Delta v_{2i}}{\bar{v}_{2i}} \right) \end{aligned}$$

$$p_i = \bar{p}_i \mp \Delta p_i$$

Valor más probable

$$\bar{p}_f = \bar{p}_{1f} + \bar{p}_{2f} = \bar{m}_1 \bar{v}_{1f} + \bar{m}_2 \bar{v}_{2f}$$

Error

$$\begin{aligned} \Delta p_f &= \Delta p_{1f} + \Delta p_{2f} = \bar{p}_{1f}(\varepsilon_{1m} + \varepsilon_{1vf}) + \bar{p}_{2f}(\varepsilon_{2m} + \varepsilon_{2vf}) \\ &= \bar{p}_{1f} \left(\frac{\Delta m}{\bar{m}_1} + \frac{\Delta v_{1f}}{\bar{v}_{1f}} \right) + \bar{p}_{2f} \left(\frac{\Delta m}{\bar{m}_2} + \frac{\Delta v_{2f}}{\bar{v}_{2f}} \right) \end{aligned}$$

$$p_f = \bar{p}_f \mp \Delta p_f$$

Valor más probable

$$\bar{K}_i = \bar{K}_{1i} + \bar{K}_{2i} = \frac{1}{2} \bar{m}_1 \bar{v}_{1i}^2 + \frac{1}{2} \bar{m}_2 \bar{v}_{2i}^2$$

Error

$$\begin{aligned} \Delta K_i &= \Delta K_{1i} + \Delta K_{2i} = \bar{K}_{1i}(\varepsilon_{1m} + 2\varepsilon_{1vi}) + \bar{K}_{2i}(\varepsilon_{2m} + 2\varepsilon_{2vi}) \\ &= \bar{K}_{1i} \left(\frac{\Delta m}{\bar{m}_1} + 2 \frac{\Delta v_{1i}}{\bar{v}_{1i}} \right) + \bar{K}_{2i} \left(\frac{\Delta m}{\bar{m}_2} + 2 \frac{\Delta v_{2i}}{\bar{v}_{2i}} \right) \end{aligned}$$

$$K_i = \bar{K}_i \mp \Delta K_i$$

Valor más probable

$$\bar{K}_f = \bar{K}_{1f} + \bar{K}_{2f} = \frac{1}{2} \bar{m}_1 \bar{v}_{1f}^2 + \frac{1}{2} \bar{m}_2 \bar{v}_{2f}^2$$

Error

$$\begin{aligned} \Delta K_f &= \Delta K_{1f} + \Delta K_{2f} = \bar{K}_{1f}(\varepsilon_{1m} + 2\varepsilon_{1vf}) + \bar{K}_{2f}(\varepsilon_{2m} + 2\varepsilon_{2vf}) \\ &= \bar{K}_{1f} \left(\frac{\Delta m}{\bar{m}_1} + 2 \frac{\Delta v_{1f}}{\bar{v}_{1f}} \right) + \bar{K}_{2f} \left(\frac{\Delta m}{\bar{m}_2} + 2 \frac{\Delta v_{2f}}{\bar{v}_{2f}} \right) \end{aligned}$$

$$K_f = \bar{K}_f \mp \Delta K_f$$