PAG. 517 N 33

INIZIALE: $v_c = 0$ — FINALE: $v_c = 5{,}0 \frac{m}{s}$

$v_p = 580 \frac{m}{s}$

$m_p = 5{,}0\,g$

$m_c = 200\,g$

1) $m_p v_p + m_c v_c = (0{,}0050\,kg)\left(580 \frac{m}{s}\right) = 2{,}9\,kg \cdot \frac{m}{s}$

2) $p_c = m_c \cdot v_c = (0{,}200\,kg)\left(5{,}0 \frac{m}{s}\right) = 1{,}0\,kg \cdot \frac{m}{s}$

3) $p_{INIZ.} = p_{FIN.} = p_{FIN.p} + p_{FIN.c}$

$2{,}9\,kg \cdot \frac{m}{s} = p_{FIN.p} + 1{,}0\,kg \cdot \frac{m}{s}$

$p_{FIN.p} = 1{,}9\,kg \cdot \frac{m}{s}$

4) $v_{FIN.p} = \frac{1{,}9\,kg \cdot \frac{m}{s}}{0{,}0050\,kg} = 380 \frac{m}{s} = 3{,}8 \times 10^2 \frac{m}{s}$

PRIMA

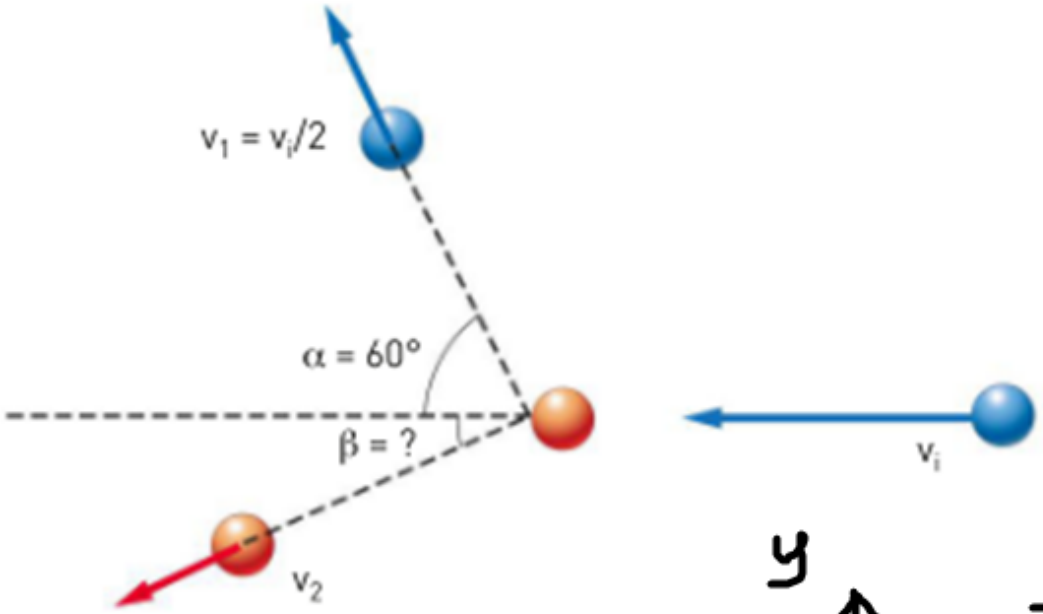
$$K_{TOT} = K_p + \cancel{K_c}^{=0} = \frac{1}{2}(0{,}0050\,kg)\left(580\,\frac{m}{s}\right)^2 = 8{,}4\times10^2\,J$$

DOPO

$$K_{TOT} = K_p + K_c = \frac{1}{2}(0{,}0050\,kg)\left(380\,\frac{m}{s}\right)^2 +$$

$$+\frac{1}{2}(0{,}200\,kg)\left(5{,}0\,\frac{m}{s}\right)^2 = 3{,}6\times10^2\,J$$

PAG. 517 N 34



$$m\vec{v}_i = m\vec{v}_1 + m\vec{v}_2$$

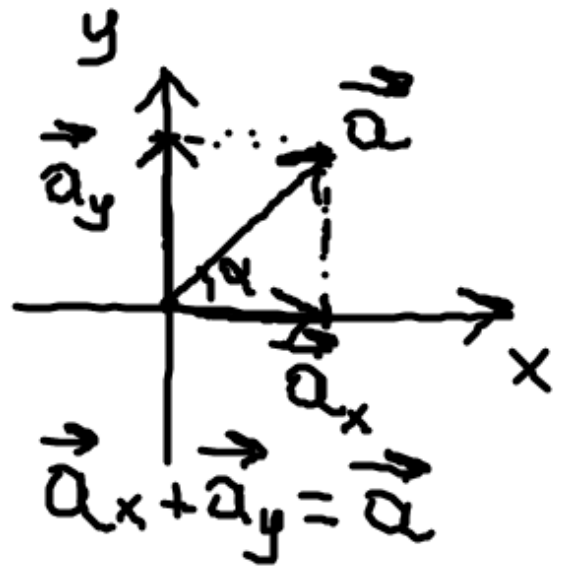
$$\Downarrow$$

$$\vec{v}_i = \vec{v}_1 + \vec{v}_2$$

ASSE ORIZZ. x

$$v_{ix} = v_{1x} + v_{2x}$$

$$v_i = \frac{v_i}{2}\cos 60° + v_2 \cos\beta$$

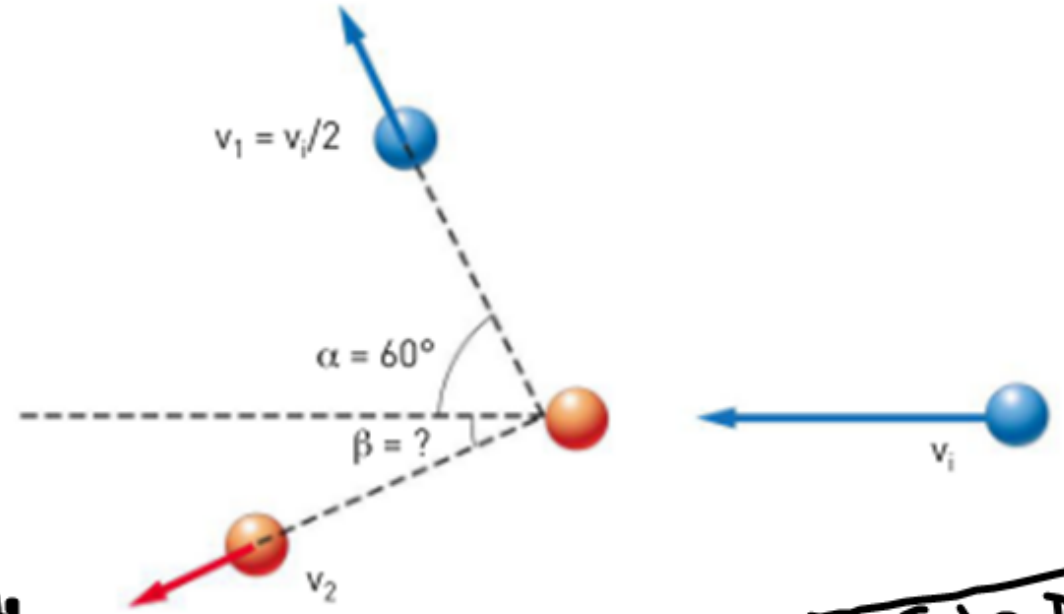


$$\vec{a}_x + \vec{a}_y = \vec{a}$$

$$a_x = a\cos\alpha$$

$$a_y = a\sin\alpha$$

$$\vec{v_i} = \vec{v_1} + \vec{v_2}$$



ASSE VERTICALE y

$$v_{iy} = v_{1y} + v_{2y}$$

$$0 = \frac{v_i}{2}\sin 60° - v_2 \sin\beta$$

$$\begin{cases} \frac{v_i}{2}\frac{\sqrt{3}}{2} = v_2 \sin\beta \Rightarrow v_2 = \frac{v_i\sqrt{3}}{4\sin\beta} \\ v_i = \frac{v_i}{2}\cdot\frac{1}{2} + v_2\cos\beta \end{cases}$$

VELOCIDICOID

$$\frac{\cos\beta}{\sin\beta} = \frac{1}{\tan\beta}$$

ATTO DI FEDE

$$v_i = \frac{v_i}{4} + \frac{v_i\sqrt{3}}{4\sin\beta}\cos\beta$$

$$1 = \frac{1}{4} + \frac{\sqrt{3}}{4}\cdot\frac{1}{\tan\beta}$$

$$1 = \frac{1}{4} + \frac{\sqrt{3}}{4} \cdot \frac{1}{\tan\beta}$$

$$\tan\beta = \frac{\sin\beta}{\cos\beta}$$

$$1 - \frac{1}{4} = \frac{\sqrt{3}}{4} \cdot \frac{1}{\tan\beta}$$

$$\frac{3}{4} = \frac{\sqrt{3}}{4} \cdot \frac{1}{\tan\beta}$$

$$\tan\beta = \frac{\sqrt{3}}{3} \Longrightarrow \beta = 30°$$

CON LA CALCOLATRICE $\tan^{-1}$