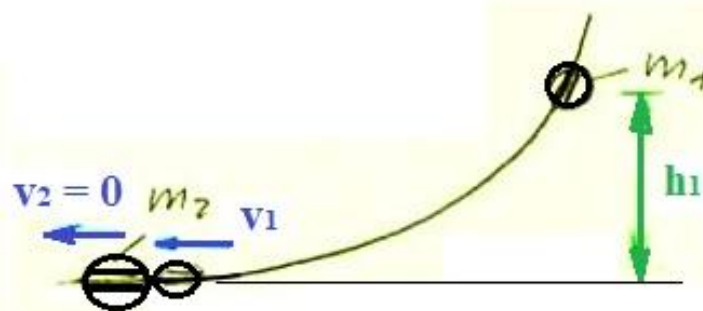


Musterlösung: Weitere Stoßaufgabe



$G/g : m_2 = 4 m_1$
 $k = 0,8$
 $h_1 = 1 \text{ m}$

a) u_1, u_2

$$v_1 = \sqrt{2g \cdot h_1} = \sqrt{2 \cdot 9,81 \cdot 1} \frac{\text{m}}{\text{s}} = 4,43 \frac{\text{m}}{\text{s}}$$

$$m_1 \cdot v_1 = m_1 u_1 + m_2 u_2$$

$$k = \frac{u_1 - u_2}{-v_1} \Rightarrow u_1 = u_2 - k \cdot v_1$$

$$m_1 v_1 = m_1 (u_2 - k v_1) + m_2 u_2$$

$$m_1 v_1 = m_1 u_2 - m_1 k v_1 + m_2 u_2$$

$$m_1 v_1 + m_1 k v_1 = u_2 (m_1 + m_2)$$

$$u_2 = \frac{m_1 v_1 (1+k)}{m_1 + m_2} = \frac{m_1 \cdot 4,43 \frac{\text{m}}{\text{s}} (1+0,8)}{m_1 + 4 m_1}$$

$$u_2 = \frac{4,43 \frac{\text{m}}{\text{s}} (1,8)}{5} = 1,59 \frac{\text{m}}{\text{s}}$$

$$u_1 = 1,59 \frac{\text{m}}{\text{s}} - 0,8 \cdot 4,43 \frac{\text{m}}{\text{s}} = -1,95 \frac{\text{m}}{\text{s}}$$

b) Rücksprunghöhe

$$\frac{1}{2} m_1 u_1^2 = m_1 g \cdot h_2$$

$$h_2 = \frac{u_1^2}{2g} = \frac{1,95^2}{2 \cdot 9,81} \frac{\text{m}^2}{\text{s}^2} =$$

$$h_2 = \underline{\underline{0,194 \text{ m}}}$$

