

$$P_2 = \frac{\partial L}{\partial \dot{x}_2} = m_2 \dot{x}_2 + m_3 (\dot{x}_1 + \dot{x}_2) = \dot{x}_2 (m_2 + m_3) + m_3 \dot{x}_1$$

$$\frac{\partial L}{\partial x_2} = g(m_3 - m_2) \neq 0 \Rightarrow \text{nicht zyklisch}$$

$$\frac{d}{dt} P_2 - \frac{\partial L}{\partial x_2} = 0$$

$$\text{II } \ddot{x}_2 + \frac{2m_3}{m_2 + m_3} \ddot{x}_1 + g \frac{m_3 - m_2}{m_3 + m_2} = 0 \quad \checkmark$$

~~analog~~

$$\text{III analog: } \ddot{x}_1 + \frac{2m_2}{m_2 + m_3} \ddot{x}_2 + g \frac{m_2 - m_3}{m_2 + m_3} = 0 \quad \checkmark$$

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