$$\frac{m_i m_j (q_i - q_j)^2}{MI} = \frac{m_k v_k^2}{K}, \quad \frac{m_k q_k^2}{I} = \frac{m_i m_j (v_i - v_j)^2}{MK},$$

$$\frac{m_k q_k^2}{I} + \frac{m_k v_k^2}{K} = \frac{m_i m_j (q_i - q_j)^2}{MI} + \frac{m_i m_j (v_i - v_j)^2}{MK}$$

$$= \frac{m_i + m_j}{M},$$

$$\frac{q_i \wedge q_j}{I} + \frac{v_i \wedge v_j}{K} = 0,$$

$$\sum_{ijk} m_i m_j |p_k|^\alpha = \text{const.}$$