

ローレンツ変換

$$\gamma = \frac{1}{\sqrt{1-\beta^2}} = \frac{q_0}{m_\pi}, \quad \beta = \sqrt{1-1/\gamma^2}$$

実験室系 ← 重心系

$$q_0 = \gamma(q_0^* + \beta \cdot q_z^*)$$

$$q_x = q_x^*$$

$$q_y = q_y^*$$

$$q_z = \gamma(q_z^* + \beta \cdot q_0^*)$$

重心系 ← 実験室系

$$q_0^* = \gamma(q_0 - \beta \cdot q_z)$$

$$q_x^* = q_x$$

$$q_y^* = q_y$$

$$q_z^* = \gamma(q_z - \beta \cdot q_0)$$