

$$E^2 = m^2 c^4 = m_0^2 c^4 / (1 - \frac{v^2}{c^2})$$

$$= m_0^2 c^4 / (1 - \frac{p^2}{m^2 c^2}) = \frac{m_0^2 c^4}{(1 - \frac{p^2 c^2}{E^2})}$$

$$\Rightarrow E^2 = p^2 c^2 + m_0^2 c^4$$

Procedo 2 nerelativizdaj modulu

$$T = E - m_0 c^2 = (p^2 c^2 + m_0^2 c^4)^{1/2} - m_0 c^2$$

$$= m_0 c^2 \left( 1 + \frac{p^2}{m_0^2 c^2} \right)^{1/2} - m_0 c^2$$

At  $v^2 \ll c^2 \Rightarrow p^2 \ll m_0^2 c^2 \Rightarrow$  rovi

$$T = m_0 c^2 \left[ 1 + \frac{p^2}{2 m_0^2 c^2} + \dots \right] - m_0 c^2$$

$$= \frac{p^2}{2 m_0} + \dots$$

Potru spicinas  $\varphi(v) = (11)$  pro  $v \ll c$

$$m = m_0$$

$$T = \frac{p^2}{2m} = \frac{1}{2} m v^2$$