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1) $\frac{du^1}{dt} = w \qquad \frac{du^2}{dt} = 0 \qquad \frac{du^3}{dt}{=}0$

$m\frac{d\vec{u}}{dt} = e(\vec{E} + \frac{\vec{v}}{c} \times \vec{B}) \longrightarrow \vec{v} \times \vec{B} = 0, \vec{E}||\hat{x}^1$

$\longrightarrow \vec{v}||\hat{x}^1 \longrightarrow \vec{B}||\hat{x}^1$

2) $\dot{p}^1 = eE \qquad \dot{p}^2 = 0 \qquad \dot{p}^3 = 0$
$\longrightarrow p^1 = eEt \qquad p^2 = p^3 = 0$

$\bar{t}$ istante del decadimento nel Lab.

$\vec{v}(\bar{t}) = \left(\frac{eE\bar{t}}{\sqrt{m_\pi^2 + (eE\bar{t})^2}}, 0, 0\right)$

$d\tau = \sqrt{1 - \beta^2(t)}dt$

$\tau = \int_0^{\bar{t}} \frac{m}{\sqrt{m_\pi^2 + (eEt)^2}}dt =$

$\quad = \frac{m}{eE} \text{ arcsinh } \left(\frac{eE\bar{t}}{m}\right) \longrightarrow \bar{t} = \frac{m}{eE} \text{ sinh } \left(\frac{eE\tau}{m}\right)$