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1) $\frac{N(t^*)}{N_0} = e^{-t^*/\tau}$ C.M.

Lab $t = t^*\gamma$

$\ell = \beta t \longrightarrow 0.9 = e^{-\frac{\ell}{\beta\gamma\tau}} \longrightarrow \beta = 0.997$

$E = mc^2\gamma = 1.8GeV$

2) $\beta_\mu^* = \frac{m_\mu^2 - m_\mu^2}{m_\mu^2 + m_\mu^2} = 0.27 < \beta = 0.997 \longrightarrow$ no