





Neutrino Evolution:

$$-i\frac{\partial}{\partial t}\nu = H\nu$$
in the mass eigenstate basis

$$\nu = \begin{pmatrix} \nu_1 \\ \nu_2 \end{pmatrix} \text{ and } H = \begin{pmatrix} \sqrt{p^2 + m_1^2} & 0 \\ 0 & \sqrt{p^2 + m_2^2} \end{pmatrix}$$

$$E = \sqrt{p^2 + m^2}$$

$$H = (p + \frac{m_1^2 + m_2^2}{4p})I + \frac{1}{4E}\begin{pmatrix} -\delta m^2 & 0 \\ 0 & \delta m^2 \end{pmatrix}$$

$$\delta m^2 = m_2^2 - m_1^2 > 0$$

























