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Neutrinos – The Next Energy Source

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A huge amount of energy can be reached from the neutrinos if we learned how to control them.

Energy

$$E = hf = mw^2$$

$$m(c^2 - kf^2) = hf \quad \Leftrightarrow \quad f = \frac{-h \pm \sqrt{h^2 + 4km^2c^2}}{2km}$$

$$E = \frac{h}{2k}\frac{-h \pm \sqrt{h^2 + 4km^2c^2}}{m} \quad \text{and} \quad \frac{h}{k} = \pi$$

$$\frac{\Delta E}{\Delta m} = \frac{\pi h}{2}\frac{\sqrt{h^2 + 4km^2c^2} \mp h}{m^2\sqrt{h^2 + 4km^2c^2}}$$ ((-) – charged particles; (+) – neutral)

For the tau neutrino: $m = 2.54 \times 10^{-34}\, kg$

$$\frac{\Delta E}{\Delta m} = \frac{\pi . h}{m^2} \quad \Leftrightarrow \quad \underline{\Delta E = 4c^4 \Delta m}$$ (c – Light speed)

(The general formula gives the known relation $\Delta E = c^2 \Delta m$ for protons and neutrons)

For the neutrino with $\Delta m = .01 \times m$: $\Leftrightarrow$ $\underline{\Delta E = 5 \times 10^5\, TeV}$

For the proton $\Delta m = .01 \times 1.67 \times 10^{-27}$ $\Leftrightarrow$ $\Delta E = 10 MeV$