Il modulo quadro della 26) dà la probabilità di evoluzione dei tre sapori al tempo t. Per il passaggio dal sapore α a quello β abbiamo

$$P(\nu_\alpha \to \nu_\beta; t) = \left| \sum_{j=1}^{3} U_{\alpha j} U_{\beta j} e^{-iE_j t} \right|^2$$

$$= \sum_{j=1}^{3} U_{\alpha j} U_{\beta j} \left[\cos(E_j t) - i \sin(E_j t)\right] \sum_{k=1}^{3} U_{\alpha k} U_{\beta k} \left[\cos(E_k t) + i \sin(E_k t)\right]$$

$$= \sum_{j,k} U_{\alpha j} U_{\beta j} U_{\alpha k} U_{\beta k} \Big\{ \cos(E_j t)\cos(E_k t) + \sin(E_j t)\sin(E_k t) + i\left[\cos(E_j t)\sin(E_k t) - \sin(E_j t)\cos(E_k t)\right] \Big\}$$

$$= \sum_{j,k} U_{\alpha j} U_{\beta j} U_{\alpha k} U_{\beta k} \left[\cos(E_j - E_k)t + i \sin(E_k - E_j)t\right] \qquad 27)$$

$\sin(-x) = -\sin(x)$

$\sum_{j,k} U_{\alpha j} U_{\beta j} U_{\alpha k} U_{\beta k} \sin(E_k - E_j)t = 0$

$\cos\alpha = 1 - 2\sin^2\frac{\alpha}{2}$

$$P(\nu_\alpha \to \nu_\beta; t) = \sum_{j,k} U_{\alpha j} U_{\beta j} U_{\alpha k} U_{\beta k} \cos(E_k - E_j)t$$

$$= \sum_{j,k} U_{\alpha j} U_{\beta j} U_{\alpha k} U_{\beta k} \left[1 - 2\sin^2\left(\frac{E_k - E_j}{2} t\right)\right] \qquad 28)$$

Nota questo è $\sin^2(x) = \sin^2(-x)$