FORMULE PARAMETRICHE

$$\begin{cases} \operatorname{tg}\dfrac{\alpha}{2} = \dfrac{1-\cos\alpha}{\operatorname{sen}\alpha} \\[2ex] \operatorname{tg}\dfrac{\alpha}{2} = \dfrac{\operatorname{sen}\alpha}{1+\cos\alpha} \end{cases}$$

pongo $t = \operatorname{tg}\dfrac{\alpha}{2}$

$$\begin{cases} t\operatorname{sen}\alpha = 1-\cos\alpha \\ t(1+\cos\alpha) = \operatorname{sen}\alpha \end{cases}$$

$\left.\begin{array}{l}\operatorname{sen}\alpha \\ \cos\alpha\end{array}\right\}$ scrivere in funzione del parametro t.

$$\begin{cases} \cos\alpha = 1 - t\operatorname{sen}\alpha \\ t + t(1-t\operatorname{sen}\alpha) - \operatorname{sen}\alpha = 0 \end{cases}$$

$$\begin{cases} \cos\alpha = 1 - t\operatorname{sen}\alpha \\ t + t - t^2\operatorname{sen}\alpha - \operatorname{sen}\alpha = 0 \end{cases}$$

$$\begin{cases} \operatorname{sen}\alpha = \dfrac{2t}{1+t^2} \\[2ex] \cos\alpha = 1 - \dfrac{2t^2}{1+t^2} \end{cases}$$

$$\boxed{\begin{cases} \operatorname{sen}\alpha = \dfrac{2t}{1+t^2} \\[2ex] \cos\alpha = \dfrac{1-t^2}{1+t^2} \end{cases}}$$

$t = \operatorname{tg}\dfrac{\alpha}{2}$

$$\frac{\alpha}{2} \neq \frac{\pi}{2} + k\pi \qquad k \in \mathbb{Z}$$

$$\alpha \neq \pi + 2k\pi \qquad k \in \mathbb{Z}.$$

FORMULE DI WERNER E PROSTAFERESI

$$\text{sen}(\alpha+\beta)+\text{sen}(\alpha-\beta)=2\,\text{sen}\,\alpha\cos\beta$$

$$\text{sen}(\alpha+\beta)-\text{sen}(\alpha-\beta)=2\cos\alpha\,\text{sen}\,\beta$$

$$\cos(\alpha+\beta)+\cos(\alpha-\beta)=2\cos\alpha\cos\beta$$

$$\cos(\alpha+\beta)-\cos(\alpha-\beta)=-2\,\text{sen}\,\alpha\,\text{sen}\,\beta$$

$$\cos\alpha\,\text{sen}\,\beta=\frac{1}{2}\left[\text{sen}(\alpha+\beta)-\text{sen}(\alpha-\beta)\right]$$

$$\cos\alpha\cos\beta=\frac{1}{2}\left[\cos(\alpha+\beta)+\cos(\alpha-\beta)\right]$$

$$\text{sen}\,\alpha\,\text{sen}\,\beta=\frac{1}{2}\left[\cos(\alpha-\beta)-\cos(\alpha+\beta)\right]$$

Poniamo: $\begin{cases}\alpha+\beta=p\\ \alpha-\beta=q\end{cases}$ $\quad\begin{cases}2\alpha=p+q\\ 2\beta=p-q\end{cases}$ $\begin{cases}\alpha=\dfrac{p+q}{2}\\ \beta=\dfrac{p-q}{2}\end{cases}$

PROSTAFERESI:

$$\text{sen}\,p+\text{sen}\,q=2\,\text{sen}\,\frac{p+q}{2}\cos\frac{p-q}{2}$$

$$\text{sen}\,p-\text{sen}\,q=2\cos\frac{p+q}{2}\,\text{sen}\,\frac{p-q}{2}$$

$$\cos p+\cos q=2\cos\frac{p+q}{2}\cos\frac{p-q}{2}$$

$$\cos p-\cos q=-2\,\text{sen}\,\frac{p+q}{2}\,\text{sen}\,\frac{p-q}{2}$$

WERNER:

$$\cos\alpha\,\text{sen}\,\beta=\frac{1}{2}\left[\text{sen}(\alpha+\beta)-\text{sen}(\alpha-\beta)\right]$$

$$\cos\alpha\cos\beta=\frac{1}{2}\left[\cos(\alpha+\beta)+\cos(\alpha-\beta)\right]$$

$$\text{sen}\,\alpha\,\text{sen}\,\beta=\frac{1}{2}\left[\cos(\alpha-\beta)-\cos(\alpha+\beta)\right]$$