SERIE DI FOURIER

$$s(t) = \frac{a_0}{2} + \sum_{n=1}^{\infty}\left(a_n \cos\left(\frac{2n\pi t}{T}\right) + b_n \operatorname{sen}\left(\frac{2n\pi t}{T}\right)\right)$$

dove:

$$a_0 = \frac{2}{T}\int_{-\frac{T}{2}}^{\frac{T}{2}} s(t)\,dt$$

$$a_n = \frac{2}{T}\int_{-\frac{T}{2}}^{\frac{T}{2}} s(t)\cos\left(\frac{2\pi n}{T}t\right)dt$$

$$b_n = \frac{2}{T}\int_{-\frac{T}{2}}^{\frac{T}{2}} s(t)\operatorname{sen}\left(\frac{2\pi n}{T}t\right)dt$$

FORMA COMPLESSA DELLA S.F.

$$s(t) = \sum_{n=-\infty}^{+\infty} c_n e^{j\frac{2\pi n}{T}t} \qquad \text{dove } c_n = \frac{1}{T}\int_{-\frac{T}{2}}^{\frac{T}{2}} s(t)\, e^{-j\frac{2\pi n}{T}t}\,dt$$

TRASFORMATA DI FOURIER.

$$s(t) = \int_{-\infty}^{+\infty} S(f)\, e^{j2\pi t f}\,df$$

ANTITRASFORMATA DI FOURIER.

$$S(f) = \int_{-\infty}^{+\infty} s(t)\, e^{-j2\pi t f}\,dt$$

TRASFORMATA DI FOURIER

TRASFORMATA DI FOURIER A PARTIRE DALLA SERIE

(Funz. Periodiche)

$$s(t) = \sum_{n=-\infty}^{+\infty} c_n e^{jn\omega_0 t}$$

$$S(f) = \mathcal{F}\{s(t)\} = \sum_{n=-\infty}^{+\infty} c_n\, \delta(f - nf_0)$$

$$c_n = \frac{1}{T}\int_{-\frac{T}{2}}^{\frac{T}{2}} s(t)\, e^{-j2\pi n f t}\,dt$$