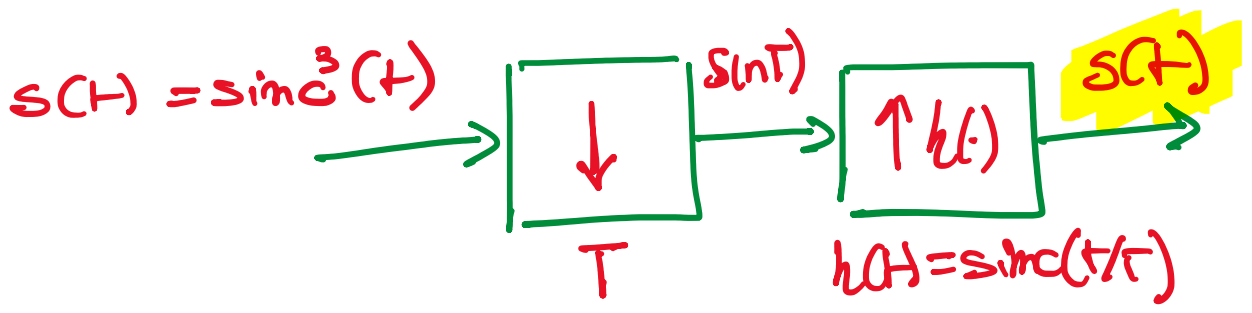
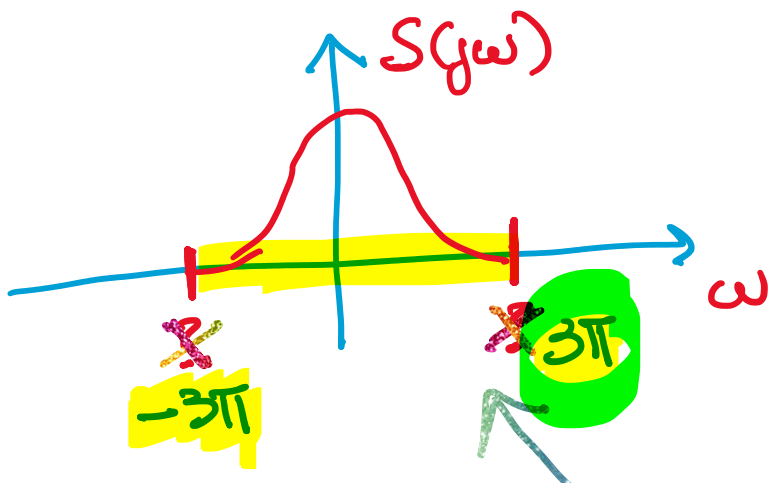
Le24

Friday, 8 May 2026 08:36

ES 1 PROPORRE UNO SCHEMA DI CAMPIONAMENTO/INTERPOLAZIONE CON RICOSTRUZIONE PERFETTA PER IL SEGNALE



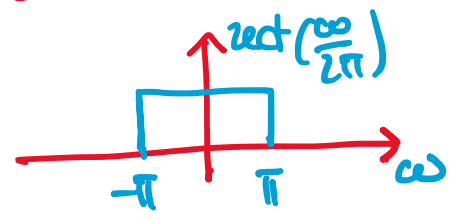
T = ?

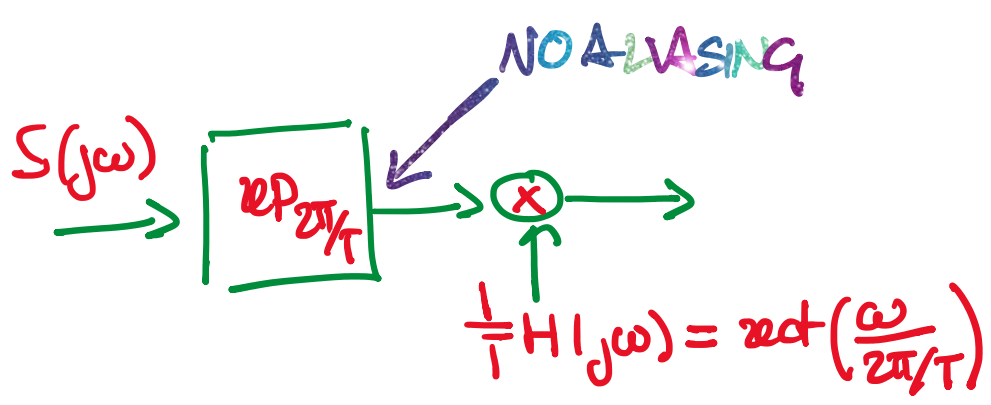


regola dell'estensione della convoluzione

$$s(t) = \text{sinc}^3(t) = \text{sinc}(t) \cdot \text{sinc}(t) \cdot \text{sinc}(t)$$

$$S(j\omega) \propto \text{rect}\left(\frac{\omega}{2\pi}\right) * \text{rect}\left(\frac{\omega}{2\pi}\right) * \text{rect}\left(\frac{\omega}{2\pi}\right)$$





RICHIESTA ASSENZA DI ALIASING $D(s) < \frac{2\pi}{T}$

OVVERO $\omega_{max} = 3\pi < \pi/T$

$\Downarrow$

$T < \frac{1}{3}$ VALIDO SEMPRE

$T \leq \frac{1}{3}$ in questo caso (anché $S(j\omega_{max}) = 0$)

CONVIENE $T = 1/3$ PER TENERE LA MINOR QUANTITÀ DI INFORMAZIONE CAMPIONATA

$$s(t) = \sum_{k=-\infty}^{+\infty} s(kT)\, \text{sinc}\left(\frac{t-kT}{T}\right)$$

$$\text{sinc}^3(t) = \sum_{k=-\infty}^{+\infty} \text{sinc}^3\left(\frac{k}{3}\right) \text{sinc}(3t-k)$$