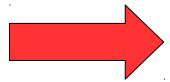


# Waveform (WF) calibration

- Calibration that takes into account the frequency response is not a neutral operation
- Necessitates to move to the frequency domain
- Then to go back to the temporal domain
- Which implies **choices** (partly arbitrary)
- **Since edge effects generate spurious high frequencies ...**
- Application of a detrend function, of windowing, or something else depending of the case ...



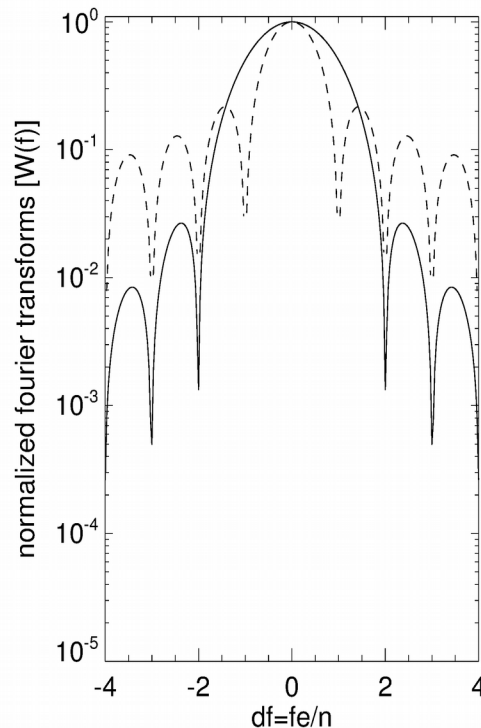
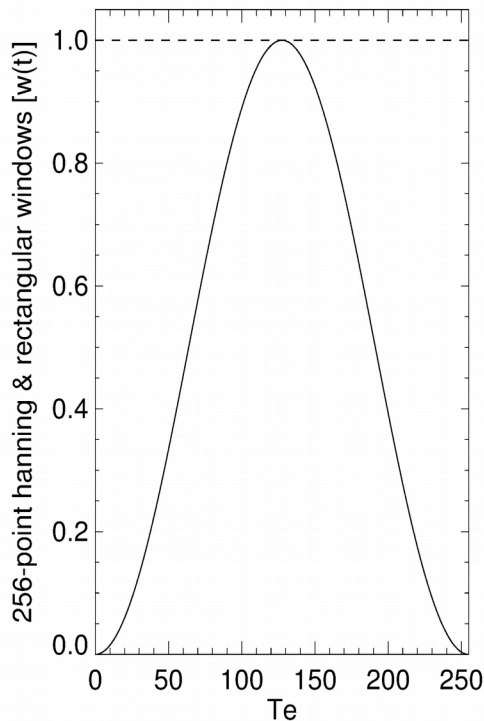
Preferable to deal with these questions, **in a unique place**, at the end of the data flow processing

# FFT

**Time domain :** sampling + windowing + periodization

**Frequency domain :** aliasing + broadening + sampling

→ 
$$\text{FFT}_N \left( \frac{f_w = f \times w}{f_n} \right) = f_e \frac{1}{N} \sum_{i \in \mathbb{Z}} F_w (i \Delta f - i f_e)$$



$$f(t) = A \cos(2\pi f_i t + \phi)$$

$$\hat{F}(f) = \frac{A}{2} (\delta(f - f_i) e^{i\phi} + \delta(f + f_i) e^{-i\phi})$$

$$\hat{F}_w(f) = \frac{A}{2} (W(f - f_i) e^{i\phi} + W(f + f_i) e^{-i\phi})$$