FFT

Uses complex Fourier Series

\[ f(x) = \sum_{k=-\infty}^{\infty} c_k e^{-i \frac{2\pi k x}{L}} = a_0 + \sum_{n=1}^{\infty} \left( a_n \cos \left( \frac{2\pi n x}{L} \right) + b_n \sin \left( \frac{2\pi n x}{L} \right) \right) \]

Orthogonal set on \([−L, L]\)

\[ \int_{-L}^{L} h_1(x) h_2(x) dx = 0 \quad \text{if} \quad h_1 \neq h_2 \]

− means complex conjugate