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Fast Fourier Transform (FFT)

Open table with initial data and use Analysis → Fast Fourier Transform menu item to perform FFT.

Formulas

MagicPlot uses 'electrical engineering' convention to set the sign of the exponential phase factor of FFT. ¹⁾

Here c_n is signal components and C_n spectrum components, $n=1...N$.

Normalize Check Box	Forward Transform (Signal→Spectrum)	Inverse Transform (Spectrum→Signal)
Unchecked	$C_n = \sum_{k=1}^N c_k e^{-2\pi i k n / N}$	$c_n = \frac{1}{N} \sum_{k=1}^N C_k e^{2\pi i k n / N}$
Checked	$C_n = \frac{1}{N} \sum_{k=1}^N c_k e^{-2\pi i k n / N}$	$c_n = \sum_{k=1}^N C_k e^{2\pi i k n / N}$

Parameters

Sampling Interval	Sampling interval dt is used to compute the data in resulting sampling column which will be (if Center zero frequency is unchecked): $0, \frac{1}{dtN}, \frac{2}{dtN}, \dots, \frac{N-1}{dtN}$
Real Imaginary	Columns with real and imaginary components of data. If your data is only real, select <all zeros> imaginary item
Forward Inverse	Transform direction
Normalize forward transform	Divide forward transform result by number of points N
Center zero frequency	If selected, after forward Fourier transform the two parts of spectrum will be rearranged so that the lower frequency components are in the center; the opposite rearrangement of spectrum will be done before inverse transform if any.

¹⁾

Most scientific applications uses the same sign conventions. But note, that the sign of exponential phase factor in Numerical Receipts in C, 2nd edition, p. 503 is the opposite

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