1 Matlab Help on fft

FFT Discrete Fourier transform.

FFT(X) is the discrete Fourier transform (DFT) of vector X. For matrices, the FFT operation is applied to each column. For N-D arrays, the FFT operation operates on the first non-singleton dimension.

FFT(X,N) is the N-point FFT, padded with zeros if X has less than N points and truncated if it has more.

FFT(X,[],DIM) or FFT(X,N,DIM) applies the FFT operation across the dimension DIM.

For length N input vector x, the DFT is a length N vector X, with elements

\[ X(k) = \sum_{n=1}^{N} x(n) \exp(-j*2*pi*(k-1)*(n-1)/N), \quad 1 \leq k \leq N. \]

The inverse DFT (computed by IFFT) is given by

\[ x(n) = \frac{1}{N} \sum_{k=1}^{N} X(k) \exp( j*2*pi*(k-1)*(n-1)/N), \quad 1 \leq n \leq N. \]

See also fft2, fftn, fftshift, fftw, ifft, ifft2, ifftn.