1 Matlab Help on specgram

SPECGRAM Calculate spectrogram from signal.
B = SPECGRAM(A,NFFT,Fs,WINDOW,NOVERLAP) calculates the spectrogram for
the signal in vector A. SPECGRAM splits the signal into overlapping
segments, windows each with the WINDOW vector and forms the columns of
B with their zero-padded, length NFFT discrete Fourier transforms. Thus
each column of B contains an estimate of the short-term, time-localized
frequency content of the signal A. Time increases linearly across the
columns of B, from left to right. Frequency increases linearly down
the rows, starting at 0. If A is a length NX complex signal, B is a
complex matrix with NFFT rows and
\[ k = \text{fix}(\frac{NX-NOVERLAP}{\text{length}(WINDOW)-NOVERLAP}) \]
columns. If A is real, B still has k columns but the higher frequency
components are truncated (because they are redundant); in that case,
SPECGRAM returns B with NFFT/2+1 rows for NFFT even and (NFFT+1)/2 rows
for NFFT odd. If you specify a scalar for WINDOW, SPECGRAM uses a
Hanning window of that length. WINDOW must have length smaller than
or equal to NFFT and greater than NOVERLAP. NOVERLAP is the number of
samples the sections of A overlap. Fs is the sampling frequency
which does not effect the spectrogram but is used for scaling plots.

\[ [B,F,T] = \text{SPECGRAM}(A,NFFT,Fs,WINDOW,NOVERLAP) \]
returns a column of
frequencies F and one of times T at which the spectrogram is computed.
F has length equal to the number of rows of B, T has length k. If you
leave Fs unspecified, SPECGRAM assumes a default of 2 Hz.

B = SPECGRAM(A) produces the spectrogram of the signal A using default
settings; the defaults are NFFT = minimum of 256 and the length of A, a
Hanning window of length NFFT, and NOVERLAP = length(WINDOW)/2. You
can tell SPECGRAM to use the default for any parameter by leaving it
off or using [] for that parameter, e.g. SPECGRAM(A,[],1000)

SPECGRAM with no output arguments plots the absolute value of the
spectrogram in the current figure, using IMAGESC(T,F,20*log10(ABS(B))),
AXIS XY, COLORMAP(JET) so the low frequency content of the first
portion of the signal is displayed in the lower left corner of the axes.

See also PSD

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