

Short-time fourier transform with the window size fixed in the frequency domain (STFT-FD): implementation

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Abstract-

The Short-Time Fourier Transform (STFT) is widely used to convert signals from the time domain into a time–frequency representation. This representation has well known limitations regarding time–frequency resolution. In this paper, we present a set of MATLAB functions to compute a transform, which uses the basic concept of the Short-Time Fourier Transform, but fixes the window size in the frequency domain instead of in the time domain. This approach is simpler than similar existing methods, such as adaptive STFT or multi-resolution STFT, and in particular it requires neither the filters of multi-resolution techniques, nor the evaluation of the local signal characteristics of adaptive techniques. An illustrative example is presented and compared with the Morlet wavelet transform.

Index Terms- Short Time Fourier Transform; Time-frequency domain; Window Size; Multi-resolution; Wavelet; Electrocardiogram

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