

Mathematics for Machine Learning

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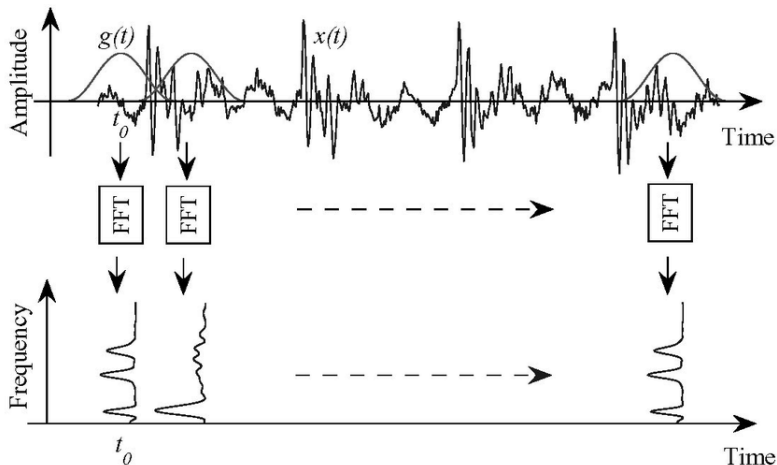


Short Time Fourier Transform

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Window Functions

Definition

Hann window of the length N is the following sequence

$$\omega_n = \sin^2\left(\frac{\pi n}{N}\right), n = 0, 1, \dots, N - 1.$$

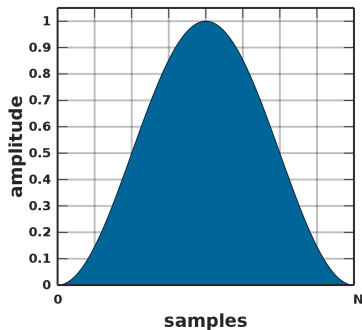
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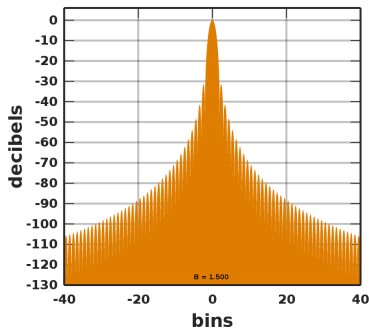
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Hann window



Fourier transform



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$$\omega_n = \frac{25}{46} \left(1 - \cos \left(\frac{2\pi n}{N} \right) \right), n = 0, 1, \dots, N - 1.$$

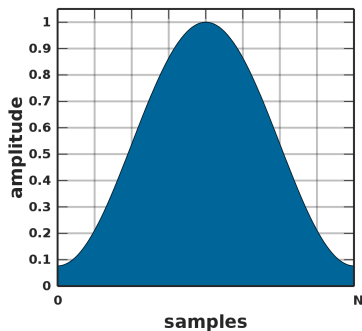
Window Functions

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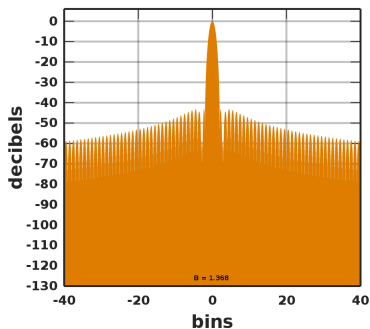
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Hamming window ($a_0 = 0.53836$)



Fourier transform



Spectrogram

