DTFT Octave Codes (4A)

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This document was produced by using LibreOffice and Octave.

Based on
M.J. Roberts, Fundamentals of Signals and Systems

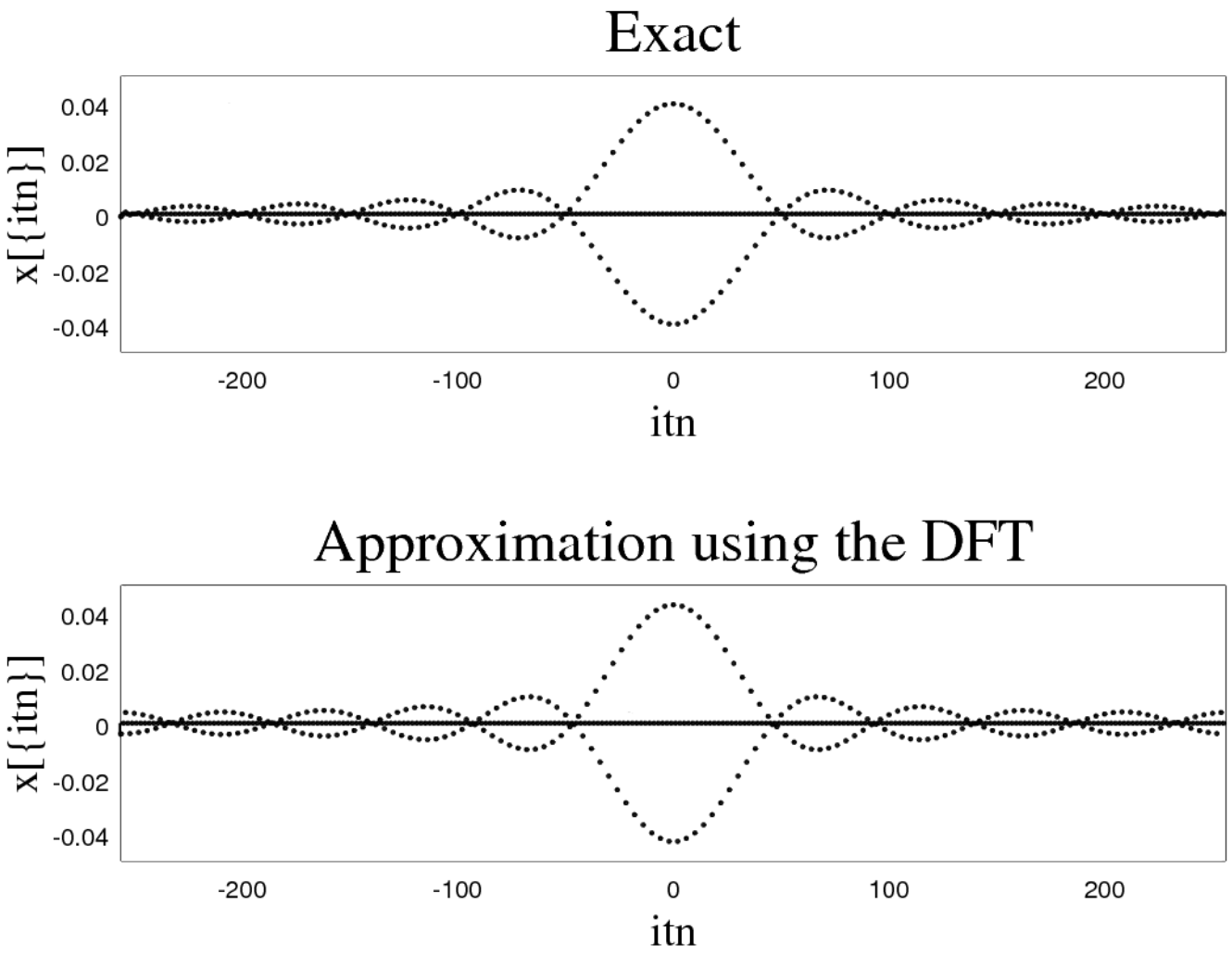
Normalized ω_s and ω_0

```
NF = 512;
k = [0:NF-1]';

X = rect(50*(k/NF-1/4)) + rect(50*(k/NF-3/4));

xa = real(fftshift(ifft(X)));
n = [-NF/2:NF/2-1]';

xe = sinc(n/50).*cos(pi*n/2)/25;
```

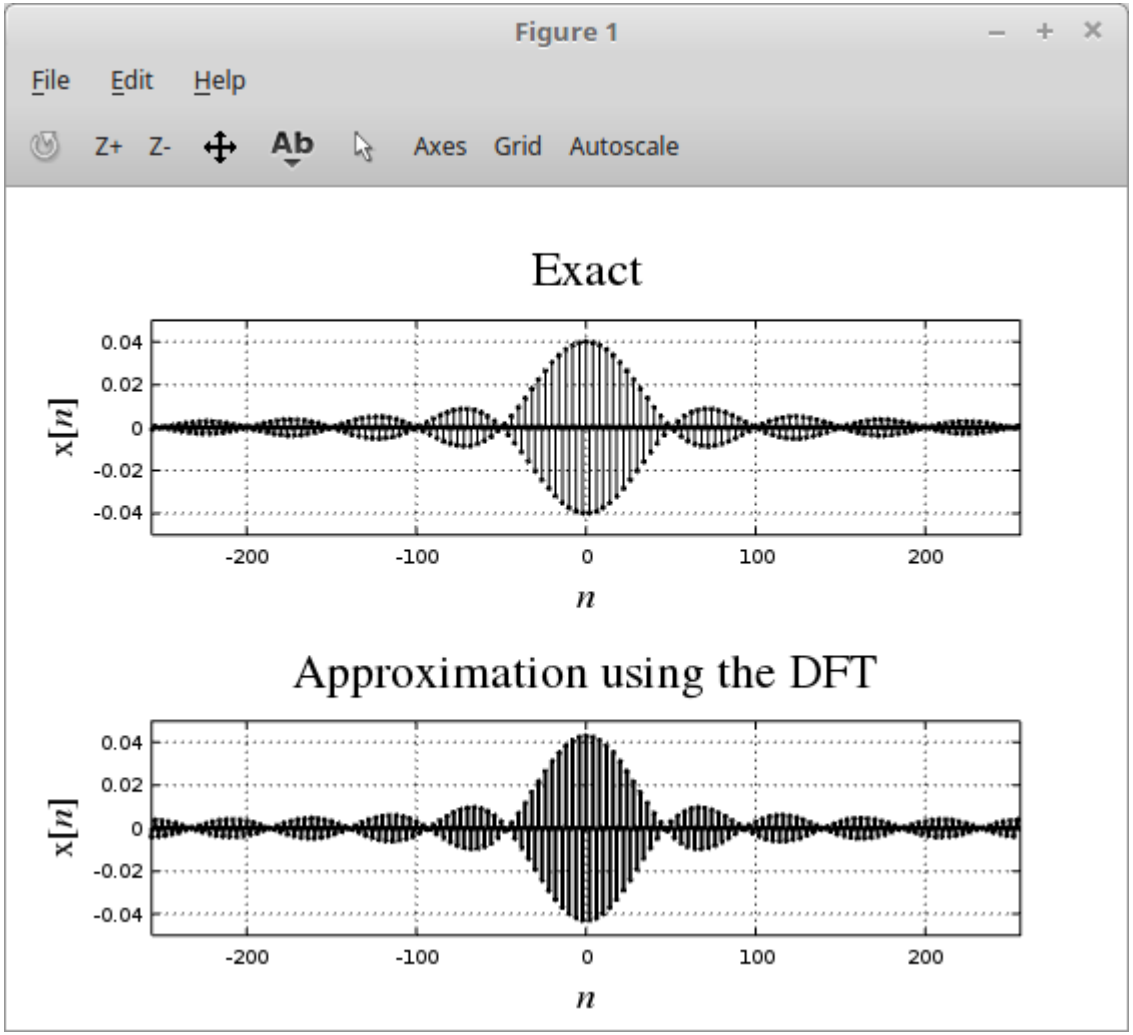
Normalized ω_s and ω_0

```
subplot(2,1,1);
p = stem(n,xe,'k','filled');
set(p,'LineWidth',1,'MarkerSize',2);
axis([-NF/2,NF/2,-0.05,0.05]); grid on;
xlabel('\itn','FontName','Times','FontSize', 18);
ylabel('x[{\itn}]','FontName','Times','FontSize',18);
title('Exact','FontName','Times', 'FontSize', 24);

subplot(2,1,2);
p = stem(n,xa,'k','filled');
set(p,'LineWidth',2,'MarkerSize',2);
axis([-NF/2,NF/2,-0.05,0.05]); grid on;
xlabel('\itn','FontName','Times','FontSize', 18);
ylabel('x[{\itn}]','FontName','Times','FontSize',18);
title('Approximation using the DFT','FontName','Times',
'FontSize', 24);
```

Normalized ω_s and ω_0



Normalized ω_s and ω_0



References

[1] http://en.wikipedia.org/
[2] J.H. McClellan, et al., Signal Processing First, Pearson Prentice Hall, 2003
[3] M.J. Roberts, Fundamentals of Signals and Systems
[4] S.J. Orfanidis, Introduction to Signal Processing
[5] K. Shin, et al., Fundamentals of Signal Processing for Sound and Vibration Engineerings

[6] A “graphical interpretation” of the DFT and FFT, by Steve Mann