DTFT OF N=4 AND DFT OF N=8

PROGRAM:

x=input(‘input sequence=’);

N=length(x);

X=zeros(1,4);

for k=0:3

for n=1:4

X(k+1)=X(k+1)+(x(n)\*exp(-1i\*2\*pi\*k\*(n-1)/N));

end

end

k=0:3;

subplot(4,1,1);

stem(k,abs(X),'linewidth',1.5);

title('|X(w)| 4 point DFT');

subplot(4,1,3);

P=atan(imag(X)./real(X));

for i=1:4

if P(i)<0

P(i)=P(i)+(2\*pi);

end

end

stem(k,P,'linewidth',1.5);

title('<X(w) 4 point DFT');

x=[1 2 3 4 0 0 0 0];

N=length(x);

X=zeros(1,8);

for k=0:7

for n=1:8

X(k+1)=X(k+1)+(x(n)\*exp(-1i\*2\*pi\*k\*(n-1)/N));

end

end

k=0:(N-1);

subplot(4,1,2);

stem(k,abs(X),'linewidth',1.5);

title('|X(w)| 8 point DFT');

h2(2)=subplot(4,1,4);

P=atan(imag(X)./real(X));

for i=1:8

if P(i)<0

P(i)=P(i)+(2\*pi);

end

end

stem(k,P,'linewidth',1.5);

title('<X(w) 8 point DFT');