程序1主程序

df=0.01;

fs=10;

ts=1/fs;

t=[-5: ts: 5];

x1=zeros(size(t));

x1(41:51)=t(41:51)+1;

x1(52:61)= ones(size(x1(52:61)));

x2=zeros(size(t));

x2(51:71)=x1(41:61);

[X1,x11,df1]=fftseq(x1,ts,df);

[X2,x21,df2]=fftseq(x2,ts,df);

X11=X1/fs;

X21=X2/fs;

f=[0:df1:df1\*(length(x11)-1)]-fs/2;

plot(f, fftshift(abs(X11)))

figure

plot (f(500:525),fftshift(angle(X11(500:525))),f(500:525),fftshift(angle(X21(500:525))),'--')

子程序

function [M,m,df]=fftseq(m,ts,df)

fs=1/ts;

if nargin == 2

n1=0;

else

n1=fs/df;

end

n2=length(m);

n=2^(max( nextpow2(n1), nextpow2(n2)));

M=fft(m,n);

m=[m,zeros(1,n-n2)];

df=fs/n;

程序2

echo off

w=[1:5:20,25:20:100,130:50:300,400:100:1000,1250:250:5000,5500:500:10000];

pn0\_db=[-20:1:30];

pn0=10.^(pn0\_db/10);

for i=1:45

for j=1:51

c(i,j)=w(i)\*log2(1+pn0(j)/w(i));

end

end

echo on

pause % Press a key to see C vs. W and P/N0

k=[0.9,0.8,0.5,0.6];

s=[-70,35];

surfl(w,pn0\_db,c',s,k)

title('Capacity vs. bandwidth and SNR')