% clc;

close all; clear all;

M = 16;

%Generate random data symbols.

data = randi([0 M-1],1000,1);

%Modulate the data symbols.

txSig = qammod(data,M);

%Pass the signal through a noisy channel.

scatterplot(txSig)

title('Transmited signal');

title('Transmitter 64-QAM constellation');

for snr=1:5:30

rxSig = awgn(txSig,snr);

%Plot the constellation diagram.

scatterplot(rxSig);

title(['Recieved signal with SNR=',num2str(snr),]);

end;

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**MQAM2**

close all; clear all; clc;

len = 10000; % Number of symbols

M =[4 16 64]; % Size of alphabet

k=1

for m=1:3

% Modulate using both PSK and PAM,

% to compare the two methods.

msg = randi([0 M(m)-1],len,1); % Original signal

txpsk = qammod(msg,M(m));

% Create a scatter plot of the received signals.

scatterplot(txpsk);

i=1;

for snr=1:2:50

rxpsk= awgn(txpsk,snr,'measured');

%x=scatterplot(rxpsk);

recovpsk = qamdemod(rxpsk,M(m));

errors=0;

c=xor(msg,recovpsk);

errors=nnz(c);

BER(k,i)=errors/length(msg);i=i+1;

end;

k=k+1;

end

figure

i=0:2:48;

semilogy(i,BER(1,:),'r',i,BER(2,:),'b',i,BER(3,:),'-\*');

legend('4QAM','16QAM','64QAM');

title('BER vs SNR');

ylabel('BER');

xlabel('SNR (dB)');

grid on

hold on

