

```

clear
N = 10^6

ip = rand(1,N)>0.5;
s = 2*ip-1;
n = 1/sqrt(2)*[randn(1,N) + j*randn(1,N)];
Eb_N0_dB = [-3:10];
for ii = 1:length(Eb_N0_dB)

y = s + 10^(-Eb_N0_dB(ii)/20)*n;

ipHat = real(y)>0;

nErr(ii) = size(find([ip- ipHat]),2);
end
simBer = nErr/N;
theoryBer = 0.5*erfc(sqrt(10.^(Eb_N0_dB/10)));

close all
figure
semilogy(Eb_N0_dB,theoryBer,'b.-');
hold on
semilogy(Eb_N0_dB,simBer,'mx-');
axis([-3 10 10^-5 0.5])
grid on
legend('theory', 'simulation');
xlabel('Eb/No, dB');
ylabel('Bit Error Rate');
title('Bit error probability curve for BPSK modulation');

N = 1000000

```