

```

clear ;
N = 10^3 ;
am = 2*(rand(1,N)>0.5)-1+j*(2*(rand(1,N)>0.5)-1) ;
fs = 10;
sincNum = sin(pi*[-fs:1/fs:fs]);
sincDen = (pi*[-fs:1/fs:fs]);
sincDenZero = find(abs(sincDen)<10^-10);
sincOp = sincNum./sincDen;
sincOp(sincDenZero) = 1;
alpha = 0.5;
cosNum = cos(alpha*pi*[-fs:1/fs:fs]);
cosDen = (1-(2*alpha*[-fs:1/fs:fs]).^2);
cosDenZero = find(abs(cosDen)<10^-10);
cosOp = cosNum./cosDen;
cosOp(cosDenZero) = pi/4;
gt_alpha5 = sincOp.*cosOp;
alpha = 1;
cosNum = cos(alpha*pi*[-fs:1/fs:fs]);
cosDen = (1-(2*alpha*[-fs:1/fs:fs]).^2);
cosDenZero = find(abs(cosDen)<10^-10);
cosOp = cosNum./cosDen;
cosOp(cosDenZero) = pi/4;
gt_alpha1 = sincOp.*cosOp;
amUpSampled = [am;zeros(fs-1,length(am))];
amU = amUpSampled(:).';
st_alpha5 = conv(amU,gt_alpha5);
st_alpha1 = conv(amU,gt_alpha1);
st_alpha5 = st_alpha5([1:10000]);
st_alpha1 = st_alpha1([1:10000]);
st_alpha5_reshape = reshape(st_alpha5,fs*2,N*fs/20).';
st_alpha1_reshape = reshape(st_alpha1,fs*2,N*fs/20).';
close all
figure;
plot([0:1/fs:1.99],real(st_alpha5_reshape).', 'b');
title('eye diagram with alpha=0.5');
xlabel('time')
ylabel('amplitude')
axis([0 2 -1.5 1.5])
grid on
figure;
plot([0:1/fs:1.99],real(st_alpha1_reshape).', 'b');
title('eye diagram with alpha=1')
xlabel('time')
ylabel('amplitude')
axis([0 2 -1.5 1.5 ])
grid on

```

