Correlation and Covariance of Random Process

L=[0:0.1:9];

a=length(L);

w=100;

for i=1:1:a

if L(i)>0 & L(i)<(2\*pi)

f(i)=1/(2\*pi);

else

f(i)=0;

end;

end;

t=[1:a];

x=L.\*cos(w\*t);

y=L.\*sin((w\*t));

rxx=xcorr2(x);

ryy=xcorr2(y);

rxy=xcorr2(x,y);

cxy=(cov(x,y));

figure(1);

plot(L,f);

xlabel('L');

ylabel('P');

title('Uniformly Distributed Random Variable');

figure(2);

subplot(2,1,1)

plot(x);

xlabel('t');

ylabel('A');

title('Random Variable X');

subplot(2,1,2)

plot(y);

xlabel('t');

ylabel('A');

title('Random Variable Y');

figure(3);

subplot(2,1,1)

plot(rxx);

xlabel('X');

ylabel('Rxx');

title('Autocorrelation of X');

subplot(2,1,2)

plot(ryy);

xlabel('Y');

ylabel('Ryy');

title('Autocorrelation of Y');

figure(4);

subplot(2,1,1)

plot(rxy);

xlabel('XY');

ylabel('Rxy');

title('Crosscorelation of X and Y');

subplot(2,1,2)

plot(cxy);

xlabel('XY');

ylabel('Cxy');

title('Crossvariance of X and Y');