

Experiment No : 04

Experiment Name : MATLAB program to compute autocorrelation of a sequence $x(n)$ and verify the property.

Objectives: The main objectives is to obtain auto correlation from the given sequences.

Source Code:

```
clc;

clear all;

close all;

x=input('Enter the sequence x[n]= ');

xsi=input('enter the starting index=');

Rxx=xcorr(x,x)

energy=sum(x.^2)

c_i=ceil(length(Rxx)/2)

Rxx_0=Rxx(c_i)

if Rxx_0==energy

disp('Eneregy property proved.');
```

else

disp('EnergyProperty not proved');

end

Rxxf=fliplr(Rxx)

if Rxx==Rxxf

disp('It is even.');

else

disp('It is not even.');

end

n1= xsi:length(x)+xsi-1;

n2= -(length(x)-1):(length(x)-1);

subplot(3,1,1),stem(n1,x),xlabel('n1'),ylabel('amplitude');

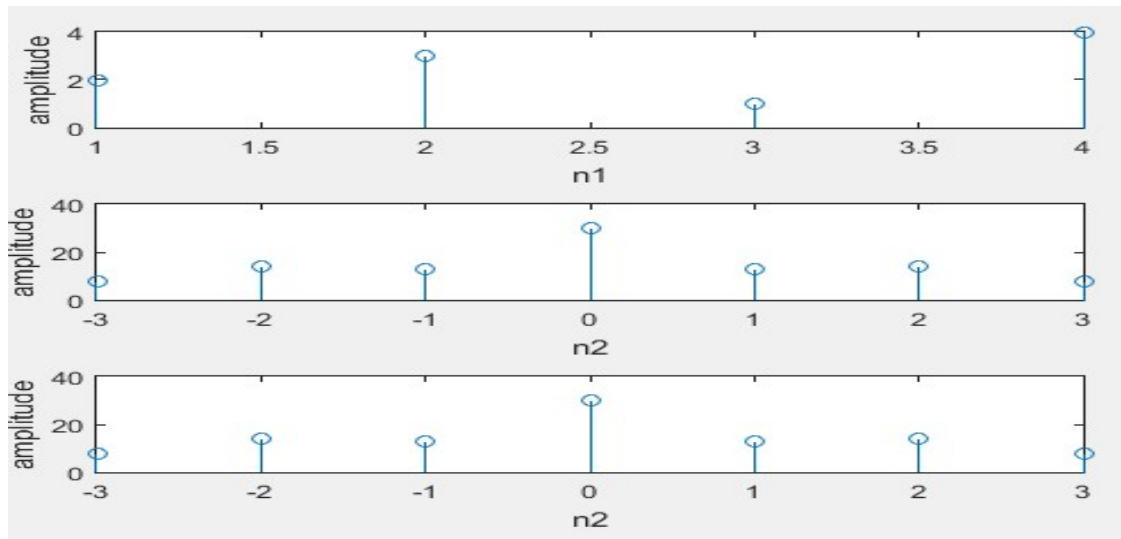
```
subplot(3,1,2),stem(n2,Rxx),xlabel('n2'),ylabel('amplitude');
```

```
subplot(3,1,3),stem(n2,Rxxf),xlabel('n2'),ylabel('amplitude');
```

Output:

Rxxf =

8 14 13 30 13 14 8



Discussion:

In this lab we can learn about how to obtain auto correlation and also learn how to plot those signals.