Experiment 13

Removal of noise by Autocorrelation / Cross correlation

```
clc;
clear all;
close all;
t=0:0.2:pi*8;
%input signal
s=sin(t);
subplot(3,2,1);
plot(s);
title('signal s');
xlabel('t');
ylabel('amplitude');
%generating noise
n = randn([1 126]);
%noisy signal
f=s+n;
subplot(3,2,2)
```

```
plot(f);
title('signal f=s+n');
xlabel('t');
ylabel('amplitude');
%autocorrelation of input signal
[as,t1]=xcorr(s,s);
subplot(3,2,3);
plot(t1, as);
title('auto correlation of s');
xlabel('t');
ylabel('amplitude');
%autocorrelation of noise signal
[an,t1]=xcorr(n,n);
subplot(3,2,4)
plot(t1,an);
title('auto correlation of n');
xlabel('t');
ylabel('amplitude');
%autocorrelation of transmitted signal
[cff,t1]=xcorr(f,f);
subplot(3,2,5)
```

```matlab
plot(t1,cff);
title('auto correlation of f');
xlabel('t');
ylabel('amplitude');
%autocorrelation of received signal
hh=as+an;
subplot(3,2,6)
plot(t1,hh);
title('addition of as+an');
xlabel('t');
ylabel('amplitude');
```