`

x.=

y=

e,=(A-LC)e=()e

=e=He

Characteristic equation=det(λI-H)

=λ^2+λ(3+l1-l2)+2+2l1+l2

Now considering λ=-1,-1

We have eqn=λ^2+2λ+1

Comparing the coefffecients

3+l1-l2=2 , 2+2l1+l2=1

Solving eqn simultaneously

l1=-2/3 l2=1/3

obs =

-1.0000 2.0000 0 0

0 -2.0000 0 0

0 0 -0.3333 1.3333

0 0 -0.3333 -1.6667

eig\_obs =

-1.0000

-1.0000

-1.0000

-2.0000

I was successful in constructing in the larger matrix

Here the doubt is in observed system lsim is not working for observer

What values must I extract to get the observer plot?

b1=[0;0;0;0];

c1=[1 -1 0 0];

d1=0;

s\_obsl=ss(obs,b1,c1,d1);

x\_obs=[-1 -1 -1 -1 ];

lsim(obs,u,t,x\_obs)

full programme

function assignment1\_040214

a=[-1 2;0 -2];

b=[0;0];

d=0;

c=[1 -1]; % rank same for actual and modified

r=[c' a\*c' a\*a\*c' a\*a\*a\*c'];

ran=rank(r);

p=[-1 -1];

ke=acker(a,c',p);

%ke\_p=place(a,c',p)

t=0:0.1:10;

u=zeros(size(t));

x0=[1 1];

le=[-2/3 ; 1/3];

k=[-1 -1];

obs=[a-b\*k b\*k;zeros(2,2) a-le\*c]

obs\_rank=rank(obs)

x\_obs=[-1 -1 -1 -1 ];

eig\_obs=eig(obs)

b1=[0;0;0;0];

c1=[1 -1 0 0];

d1=0;

system=ss(a,b,c,d);

s\_obsl=ss(obs,b1,c1,d1);

lsim(system,u,t,x0)

hold on

lsim(obs,u,t,x\_obs)

hold off

end