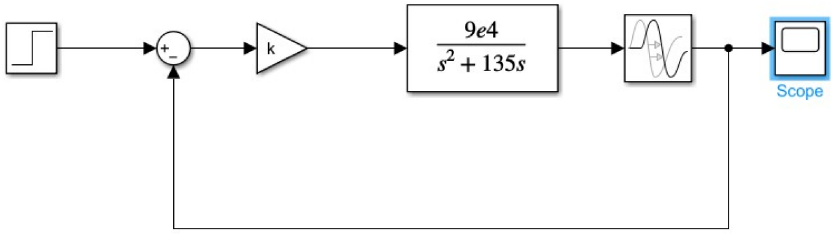
```
imshow('imagine.jpg')
```

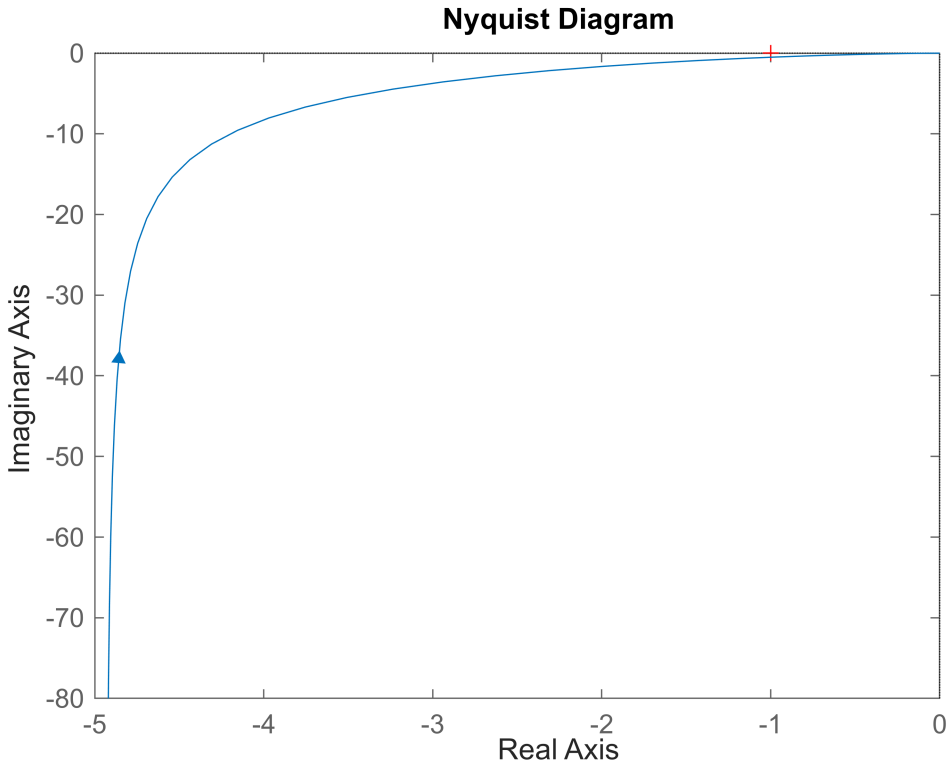



```

```

```
k = 1;
Tm = 0;

Hol = k * tf(9e4,[1 135 0])
```

```
Hol =

     90000
  -----------
  s^2 + 135 s

Continuous-time transfer function.
Model Properties
```

```
plotoptions= nyquistoptions('cstprefs') ;
plotoptions.ShowFullContour = 'off';
nyquist(Hol,plotoptions)
```

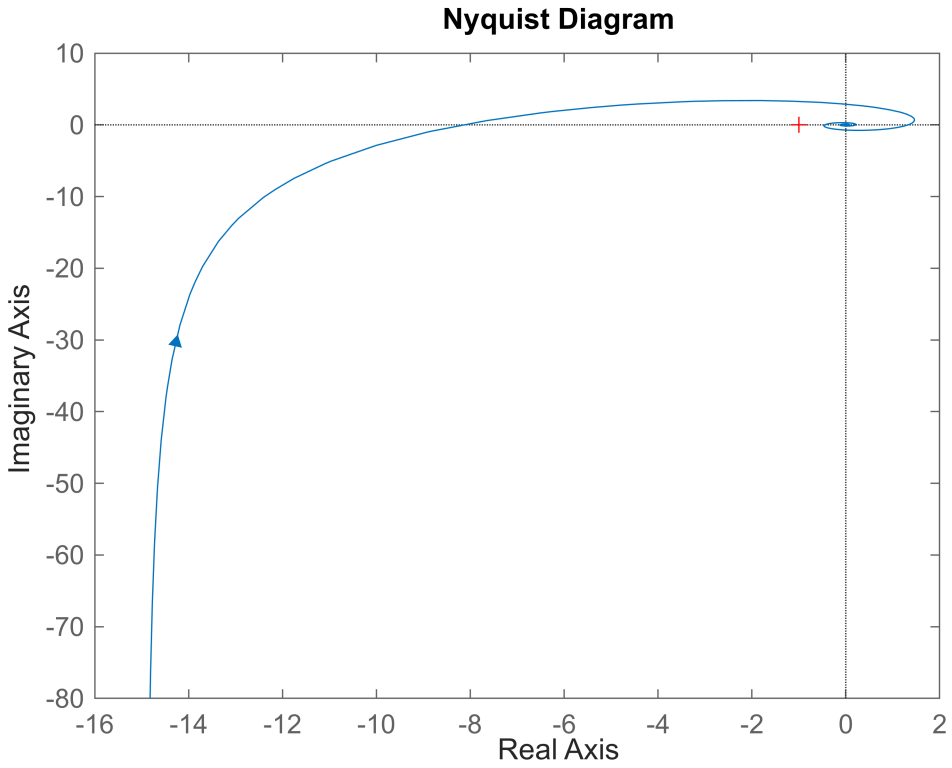



```
%It's CL stable for any k (0, infinity)
```

```
%Now nyquist if we have dead time
k = 1;
Tm = 0.015;

Hol = k * tf(9e4,[1 135 0],'IODelay',Tm)
```

```
Hol =

                    90000
  exp(-0.015*s) * -----------
                  s^2 + 135 s

Continuous-time transfer function.
Model Properties
```

```
plotoptions= nyquistoptions('cstprefs') ;
plotoptions.ShowFullContour = 'off';
nyquist(Hol,plotoptions)
```




```
mk = 1/abs(-8.1)
```

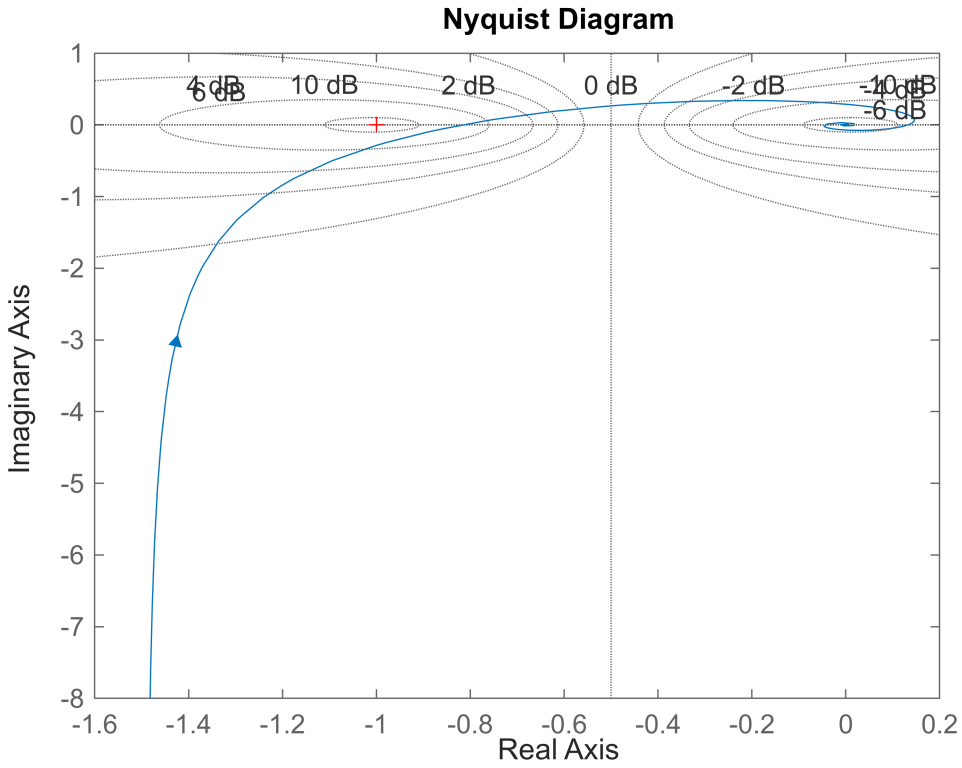
```
mk = 0.1235
```

```
%We can see that for k (0,mk) the CL is stable
```

```
%Now nyquist for a chosen k in the interval
k = 0.1;
Tm = 0.015;

Hol = k * tf(9e4,[1 135 0],'IODelay',Tm)
```

```
Hol =

                    9000
  exp(-0.015*s) * -----------
                  s^2 + 135 s

Continuous-time transfer function.
Model Properties
```

```
plotoptions= nyquistoptions('cstprefs') ;
plotoptions.ShowFullContour = 'off';
nyquist(Hol,plotoptions)
grid on
```




```
%The circles are Mp (10dB, 20dB)
```

```
clc
k = 0.05;
Tm = 0.015;
zetta = 0:0.01:1;
Mp = 1./(2.*zetta.*sqrt(1-zetta.^2));
Mp_dB = log10(Mp)
```

```
Mp_dB = 1×101
       Inf    1.6990    1.3980    1.2220    1.0973    1.0005    0.9216    0.8549 ···
```

```
M = exp(-pi.*zetta./sqrt(1-zetta.^2))*100;

Hol = k * tf(9e4,[1 135 0],'IODelay',Tm)
```

```
Hol =

                    4500
  exp(-0.015*s) * -----------
                  s^2 + 135 s

Continuous-time transfer function.
Model Properties
```

```
plot(M,Mp_dB)
```

```
grid on
```