

```
% Chebyshev-I Low Pass Filter
clc;
close all;
alphap = 0.15;
alphas = 0.9;
wp = 0.3*pi;
ws = 0.5*pi;
[n,wn] =
cheb1ord(wp/pi,ws/pi,alphap,alphas);
[b,a] = cheby1(n,alphap,wn);
[h,w] = freqz(b,a);
```

```
subplot(2,1,1);
plot(w/pi,20*log10(abs(h)));
xlabel('Normalized Frequency');
ylabel('Gain [db]');
title('Magnitude response');
```

```
subplot(2,1,2);
plot(w/pi,angle(h));
xlabel('Normalized Frequency');
ylabel('Phase [radians]');
title('Phase response');
```

```
% Chebyshev-I High Pass Filter
clc;
close all;
alphap = 1;
alphas = 15;
wp = 0.3*pi;
ws = 0.2*pi;
[n,wn] =
cheb1ord(wp/pi,ws/pi,alphap,alphas);
[b,a] = cheby1(n,alphap,wn,'high');
[h,w] = freqz(b,a);
```

```
subplot(2,1,1),
plot(w/pi,20*log10(abs(h)));
xlabel('Normalized Frequency');
ylabel('Gain [db]');
title('Magnitude response');
```

```
subplot(2,1,2),
plot(w/pi,angle(h));
xlabel('Normalized Frequency')
ylabel('Phase [radians]');
title('Phase response');
```

```
% Chebyshev-I Band Pass Filter
clc;
close all;
wp = [60 200]/500;
ws = [50 250]/500;
alphap = 3;
alphas = 40;
[n,wp] = cheb1ord(wp,ws,alphap,alphas);
[b,a] = cheby1(n,alphap,wp);
[h,w] = freqz(b,a);
```

```
subplot(2,1,1);
plot(w/pi,20*log10(abs(h)));
xlabel('Normalized Frequency');
ylabel('Gain [db]');
title('Magnitude response');
```

```
subplot(2,1,2);
plot(w/pi,angle(h));
xlabel('Normalized Frequency');
ylabel('Phase [radians]');
title('Phase response');
```

```
% Chebyshev-I Band Stop Filter
clc;
close all;
wp = [50 250]/500;
ws = [60 200]/500;
alphap = 3;
alphas = 40;
[n,ws] = cheb1ord(wp,ws,alphap,alphas);
[b,a] = cheby1(n,alphap,ws,'stop');
[h,w] = freqz(b,a);
```

```
subplot(2,1,1);
plot(w/pi, 20*log10(abs(h)));
xlabel('Normalized Frequency');
ylabel('Gain in dB');
title('Magnitude Response');
```

```
subplot(2,1,2);
plot(w/pi, angle(h));
xlabel('Normalized Frequency');
ylabel('Phase in Radians');
title('Phase Response');
```

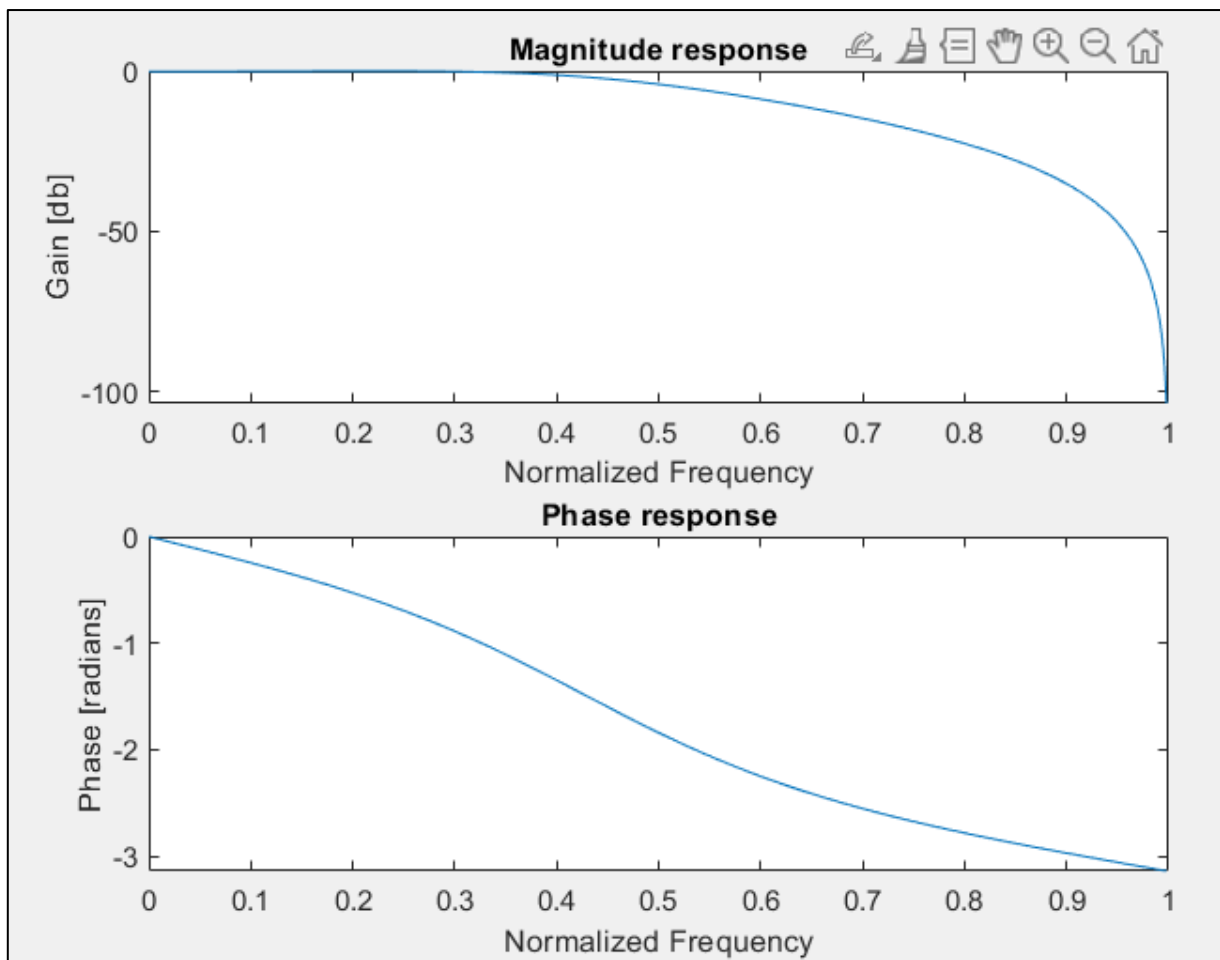


Fig. i) Chebyshev-I Low Pass Filter

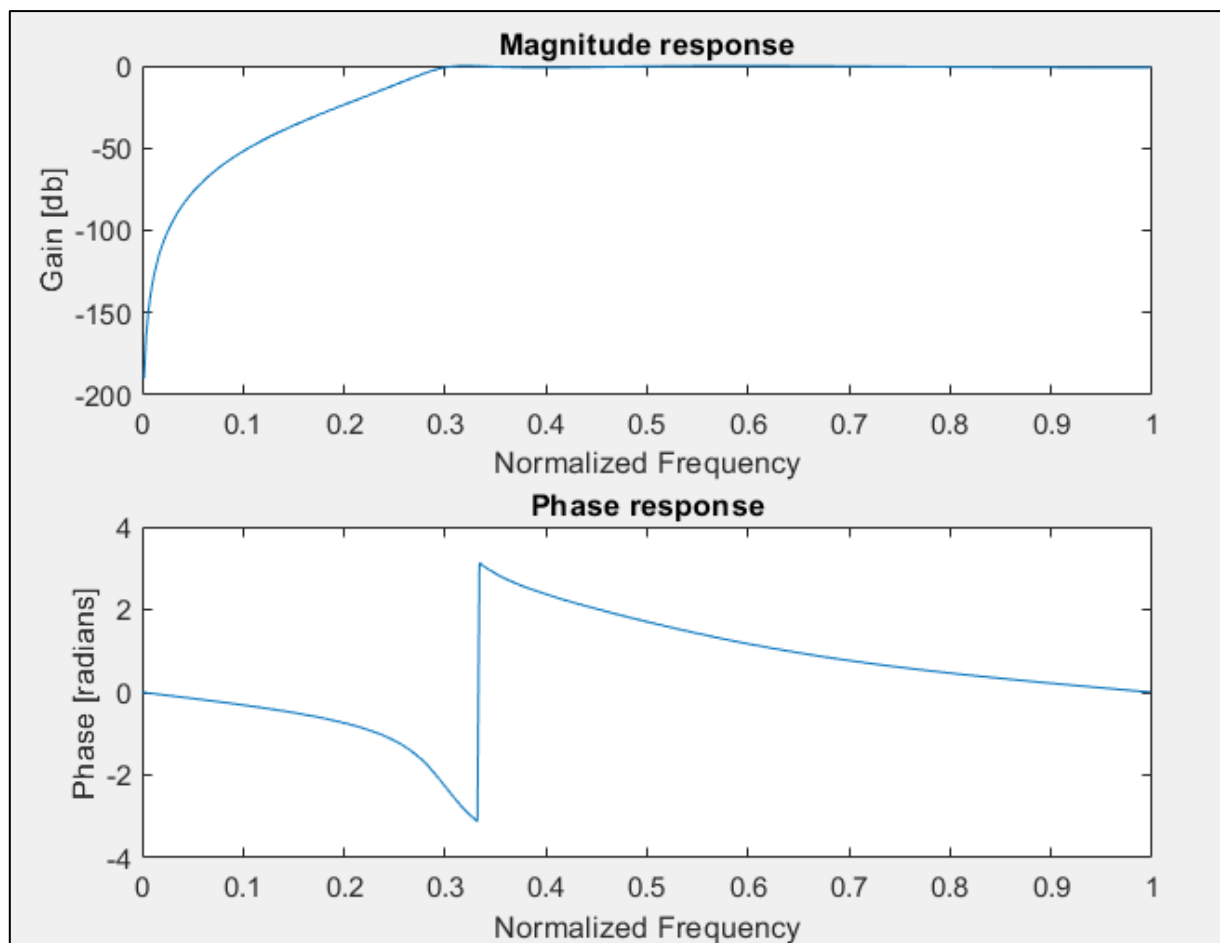


Fig. ii) Chebyshev-I High Pass Filter

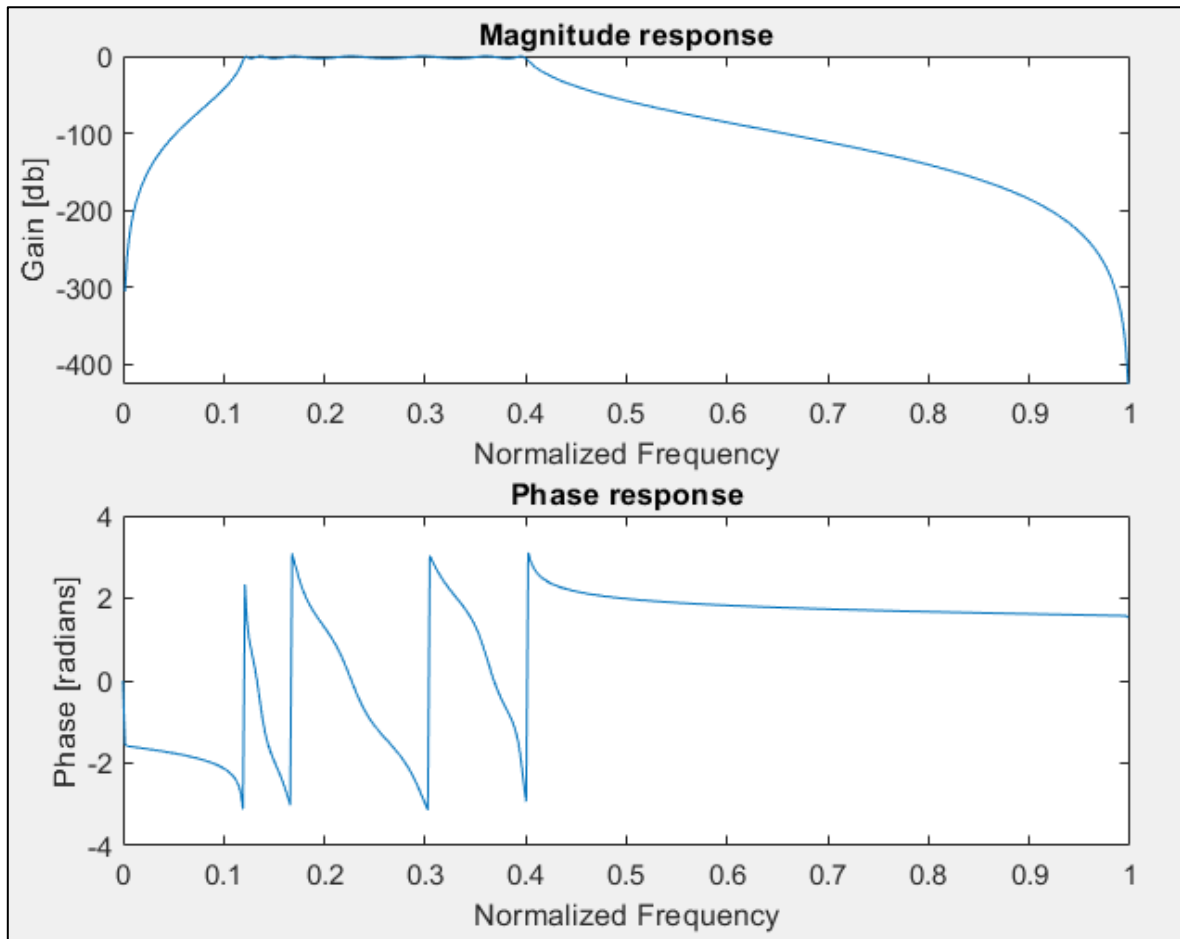


Fig. iii) Chebyshev-I Band Pass Filter

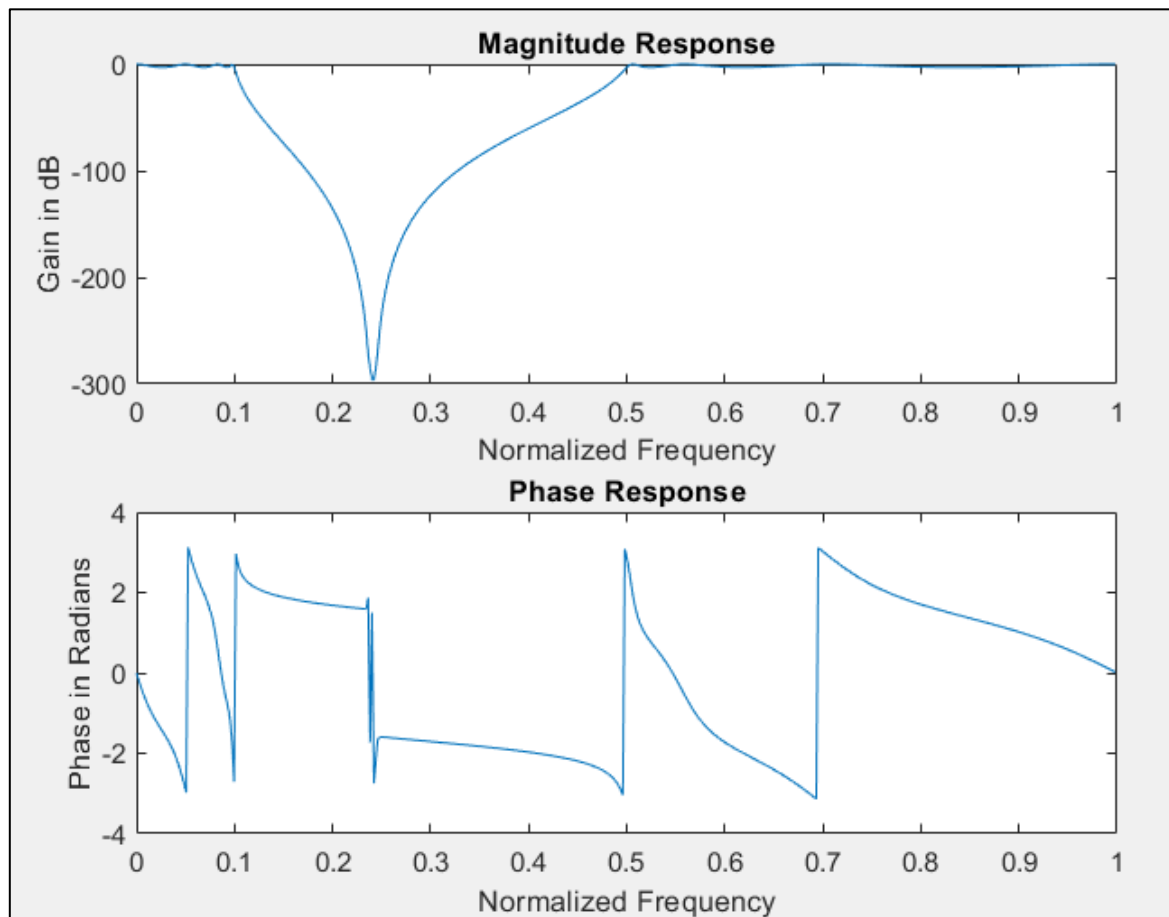


Fig. iv) Chebyshev-I Band Stop Filter