

Contents

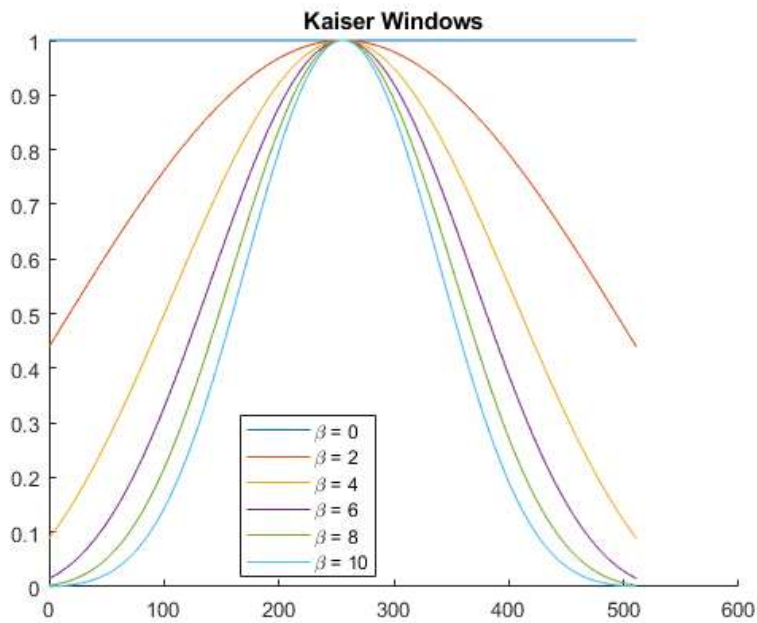
- [2b, 2c](#)
- [2d](#)

```
% 2a
samp = 512; %window length
beta = [0 2 4 6 8 10]; %kaiser parameters
figure;
hold on;
for i = 1:length(beta) %for all beta values

    w = kaiser(N,beta(i));

    plot(0:N-1,w,'DisplayName', sprintf('\beta = %g', beta(i)));
end

legend('show','Location','best');
title('Kaiser Windows')
hold off;
```



2b, 2c

```
N = 512; %window length again
beta = [0 2 4 6 8 10]; %kaiser parameters again

NFFT = 16*1024; %fft sample size

figure;
hold on;

for i = 1:length(beta)
    w = kaiser(N, beta(i));
    w_fft = fft(w,NFFT); %computing DTFT
    f = linspace(0,1,NFFT); %frequency axis
    w_fft_dB = 20 * log10(abs(w_fft)+0.00000001); %doesn't like log10(0)
    plot(f(f <= 0.01),w_fft_dB(f <= 0.01),'DisplayName', ['\beta = ', num2str(beta(i))]); %limiting axis to lower discrete time frequency

    fprintf('For beta = %.0f\n',beta(i)); %2c segment
    fprintf('W(0) = %.4f\n', abs(w_fft(1)));
    fprintf('Window function sum = %.4f\n',sum(w)); % sum of w[n]
    fprintf('\n');
end
```

```

hold off;

xlabel('f');
ylabel('dB');
title('Kaiser Window DTFT');
legend('show','Location','best');

%ylim([-100,60]);

```

```

For beta = 0
W(0) = 512.0000
Window function sum = 512.0000

```

```

For beta = 2
W(0) = 406.9431
Window function sum = 406.9431

```

```

For beta = 4
W(0) = 308.5565
Window function sum = 308.5565

```

```

For beta = 6
W(0) = 255.5273
Window function sum = 255.5273

```

```

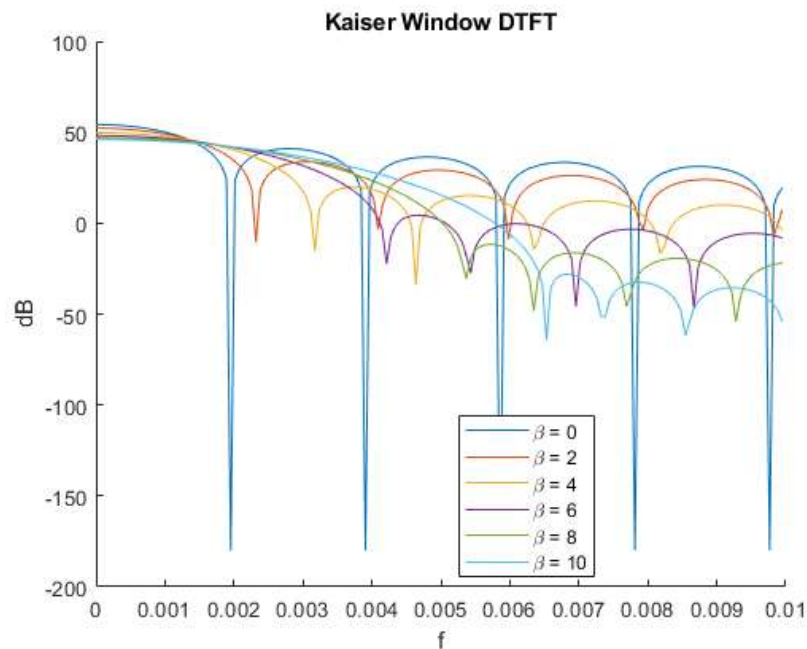
For beta = 8
W(0) = 222.6691
Window function sum = 222.6691

```

```

For beta = 10
W(0) = 199.8700
Window function sum = 199.8700

```



2d

```

%i - Width increases for increasing beta.

%i i - Height decreases for increasing beta.

```

