**SAYISAL FİTRE TASARIMI ÖDEVİ**

**Ödev1 kaiser**

function kaisercoef=mykaiser(n,alpha,N)

%kcoef=mykaiser(n,alpha,N)

%n:kaiser pencere fonksiyonunun n.katsayısını verir

%alpha:bağımsız parametre

%N:pencerenin uzunluğu

%Abdulkadir AKTABUR

%26.10.2018 rev 0

%pencere fonksiyonunun n.katsayısını bulalım

if(abs(n)<=(N-1)/2)

beta=alpha\*sqrt(1-(2\*n/N-1)^2);

I0alpha=1;

I0beta=1;

for k=1:5

I0alpha=I0alpha+((1/factorial(k))\*(alpha/2)^k)^2;

I0beta=I0beta+((1/factorial(k))\*(beta/2)^k)^2;

end

kaisercoef=I0alpha/I0beta;

else

kaisercoef=0;

end

mykaiser(0,3.9524,27)

ans =

10.8398

>> mykaiser(1,3.9524,27)

ans =

6.6108

>> mykaiser(2,3.9524,27)

ans =

4.5261

>> mykaiser(3,3.9524,27)

ans =

3.3349

>> mykaiser(4,3.9524,27)

ans =

2.5907

>> mykaiser(5,3.9524,27)

ans =

2.0972

**Ödev2 agfkaiser**

function agfkaiser=myagfkaiser(wa,wp,Aa,Ap,ws)

%agfkaiser=myagfkaiser(wa,wp,Aa,Ap,ws)

%n:agfkaiser pencere fonksiyonunun n.katsayısını verir

%wc bulunur

%Bt bulunur

%Aa ve Ap degerleri bulunur

%alpha degeri secilir

%D parametresi secilir

%N degeri secilir

%Abdulkadir AKTABUR

%29.10.2018 rev 0

%pencere fonksiyonunun n.katsayısını bulalım

wc=(wa+wp)/2;

Bt=wa-wp;

T=2\*pi/ws;

hn=[];

if(Aa<=21)

D=0.9222

else D=(Aa-7.95)/14.36;

N=ceil((ws\*D)/Bt)+1;

n=N/2;

if(Aa<=21)

alpha=0;

elseif(Aa>21 && Aa<=50)

alpha=(0.5842\*(Aa-21)^0.4)+(0.007886\*(Aa-21));

else

alpha=0.1102\*(Aa-8.7);

end

h0=((wc\*T)/pi)\*(mykaiser(n,alpha,N));

for n=1:(N-1)/2

xn=mykaiser(n,alpha,N)\*(1/n\*pi)\*sin(wc\*n\*T);

hn=[hn xn];

end

agfkaiser=hn;

hn=[flip(hn) h0 hn]

end

myagfkaiser(2.5,1.5,40,0.1,10)

hn =

Columns 1 through 8

0.2730 -0.0000 -0.3474 -0.2504 0.2999 0.6004 -0.0000 -1.0523

Columns 9 through 16

-0.9581 1.6152 5.9931 0 5.9931 1.6152 -0.9581 -1.0523

Columns 17 through 23

-0.0000 0.6004 0.2999 -0.2504 -0.3474 -0.0000 0.2730

ans =

Columns 1 through 8

5.9931 1.6152 -0.9581 -1.0523 -0.0000 0.6004 0.2999 -0.2504

Columns 9 through 11

-0.3474 -0.0000 0.2730

**Ödev3 bgfkaiser**

function bgfkaiser=mybgfkaiser(wa1,wa2,wp1,wp2,Aa,Ap,ws)

%bgfkaiser=mybgfkaiser(wa,wp,Aa,Ap,ws)

%n:bgfkaiser pencere fonksiyonunun n.katsayısını verir

%Aa ve Ap degerleri bulunur

%alpha degeri secilir

%D parametresi secilir

%N degeri seçilir

%Abdulkadir AKTABUR

%29.10.2018 rev 0

%pencere fonksiyonunun n.katsayısını bulalım

Bt=100;

wc1=wp1-(Bt/2);

wc2=wp2+(Bt/2);

T=2\*pi/ws;

hn=[];

if(Aa<=21)

D=0.9222

else D=(Aa-7.95)/14.36;

N=ceil((ws\*D)/Bt)+1;

n=N/2;

if(Aa<=21)

alpha=0;

elseif(Aa>21 && Aa<=50)

alpha=(0.5842\*(Aa-21)^0.4)+(0.007886\*(Aa-21));

else

alpha=0.1102\*(Aa-8.7);

end

h0=(((wc2-wc1)\*T)/pi)\*(mykaiser(n,alpha,N));

for n=1:(N-1)/2

xn=mykaiser(n,alpha,N)\*(1/n\*pi)\*sin((wc2\*n\*T)-(wc1\*n\*T));

hn=[hn xn];

end

bgfkaiser=hn;

hn=[flip(hn) h0 hn]

end

mybgfkaiser(200,700,400,600,45,0.2,2000)

hn =

Columns 1 through 8

-0.0710 -0.1260 -0.0775 0.0428 0.1391 0.1255 0.0000 -0.1432

Columns 9 through 16

-0.1812 -0.0637 0.1321 0.2464 0.1600 -0.0937 -0.3240 -0.3128

Columns 17 through 24

-0.0000 0.4183 0.5818 0.2281 -0.5367 -1.1671 -0.9179 0.6925

Columns 25 through 32

3.4609 6.4166 0 6.4166 3.4609 0.6925 -0.9179 -1.1671

Columns 33 through 40

-0.5367 0.2281 0.5818 0.4183 -0.0000 -0.3128 -0.3240 -0.0937

Columns 41 through 48

0.1600 0.2464 0.1321 -0.0637 -0.1812 -0.1432 0.0000 0.1255

Columns 49 through 53

0.1391 0.0428 -0.0775 -0.1260 -0.0710

ans =

Columns 1 through 8

6.4166 3.4609 0.6925 -0.9179 -1.1671 -0.5367 0.2281 0.5818

Columns 9 through 16

0.4183 -0.0000 -0.3128 -0.3240 -0.0937 0.1600 0.2464 0.1321

Columns 17 through 24

-0.0637 -0.1812 -0.1432 0.0000 0.1255 0.1391 0.0428 -0.0775

Columns 25 through 26

-0.1260 -0.0710