%画问题一动态过程的图

R=sqrt(25^2+2.5^2);

r=25;

height=3;

h=50;

for i=1:10

l(i)=60-sqrt(R^2-(r-(i-1)\*2.5)^2);

end

for i=1:10

cao1(i)=l(1)/2+60-l(1);

end

z=zeros(1,20);

for i=1:10

x1(2\*i-1)=60-l(i);

x1(2\*i)=60-l(i);

y1(2\*i-1)=25-(i-1)\*2.5;

y1(2\*i)=25-i\*2.5;

end

plot3(x1,y1,z,'Color',[1 0.5 0]);

hold on

for i=1:10

x2(2\*i-1)=l(i)-60;

x2(2\*i)=l(i)-60;

y2(2\*i-1)=25-(i-1)\*2.5;

y2(2\*i)=25-i\*2.5;

end

plot3(x2,y2,z,'Color',[1 0.5 0]);

hold on

for i=1:10

x3(2\*i-1)=l(i)-60;

x3(2\*i)=l(i)-60;

y3(2\*i-1)=(i-1)\*2.5-25;

y3(2\*i)=i\*2.5-25;

end

plot3(x3,y3,z,'Color',[1 0.5 0]);

hold on

for i=1:10

x4(2\*i-1)=60-l(i);

x4(2\*i)=60-l(i);

y4(2\*i-1)=(i-1)\*2.5-25;

y4(2\*i)=i\*2.5-25;

end

plot3(x4,y4,z,'Color',[1 0.5 0]);

hold on

plot3([x2(1),x1(1)],[y2(1),y1(1)],[0,0],'Color',[1 0.5 0])

hold on

plot3([x1(20),x4(20)],[y1(20),y4(20)],[0,0],'Color',[1 0.5 0])

hold on

plot3([x2(20),x3(20)],[y2(20),y3(20)],[0,0],'Color',[1 0.5 0])

hold on

plot3([x3(1),x4(1)],[y3(1),y4(1)],[0,0],'Color',[1 0.5 0]);

hold on

dx(1)=sqrt(l(1)^2-h^2);

gx=x1(1)+dx(1)/2;

gz=-h/2;

fx1(1)=x1(1)+dx(1);

fy1(1)=y1(1);

fz1(1)=-h;

fx1(2)=x1(2)+dx(1);

fy1(2)=y1(2);

fz1(2)=-h;

for i=2:10

fx1(2\*i-1)=l(i)/sqrt((gx-x1(2\*i-1))^2+gz^2)\*(gx-x1(2\*i-1))+x1(2\*i-1);

fy1(2\*i-1)=y1(2\*i-1);

fz1(2\*i-1)=l(i)/sqrt((gx-x1(2\*i-1))^2+gz^2)\*gz;

fx1(2\*i)=l(i)/sqrt((gx-x1(2\*i))^2+gz^2)\*(gx-x1(2\*i))+x1(2\*i);

fy1(2\*i)=y1(2\*i);

fz1(2\*i)=l(i)/sqrt((gx-x1(2\*i))^2+gz^2)\*gz;

end

for i=1:10

sin1(i)=gz/sqrt((gx-x1(2\*i-1))^2+gz^2);

curvex(i)=fx1(2\*i)+height\*sin1(i);

curvey(i)=fy1(2\*i);

curvez(i)=fz1(2\*i)+3\*sqrt(1-sin1(i)^2);

cao2(i)=sqrt((gx-x1(2\*i-1))^2+gz^2)+60-l(i);

cao(i)=cao2(i)-cao1(i);

theta(i)=acos(-gz/sqrt((gx-x1(2\*i-1))^2+gz^2))/(2\*pi)\*360;

end

for i=1:10

plot3([x1(2\*i-1),fx1(2\*i-1)],[y1(2\*i-1),fy1(2\*i-1)],[z(2\*i-1),fz1(2\*i-1)],'Color',[1 0.5 0]);

plot3([x1(2\*i),fx1(2\*i)],[y1(2\*i),fy1(2\*i)],[z(2\*i),fz1(2\*i)],'Color',[1 0.5 0]);

plot3([fx1(2\*i-1),fx1(2\*i)],[fy1(2\*i-1),fy1(2\*i)],[fz1(2\*i-1),fz1(2\*i)],'Color',[1 0.5 0]);

end

hold on

fx2(1)=x2(1)-dx(1);

fy2(1)=y2(1);

fz2(1)=-h;

fx2(2)=x2(2)-dx(1);

fy2(2)=y2(2);

fz2(2)=-h;

for i=2:10

fx2(2\*i-1)=-l(i)/sqrt((gx+x2(2\*i-1))^2+gz^2)\*(gx+x2(2\*i-1))+x2(2\*i-1);

fy2(2\*i-1)=y2(2\*i-1);

fz2(2\*i-1)=l(i)/sqrt((gx+x2(2\*i-1))^2+gz^2)\*gz;

fx2(2\*i)=-l(i)/sqrt((gx+x2(2\*i))^2+gz^2)\*(gx+x2(2\*i))+x2(2\*i);

fy2(2\*i)=y2(2\*i);

fz2(2\*i)=l(i)/sqrt((gx+x2(2\*i))^2+gz^2)\*gz;

end

for i=1:10

plot3([x2(2\*i-1),fx2(2\*i-1)],[y2(2\*i-1),fy2(2\*i-1)],[z(2\*i-1),fz2(2\*i-1)],'Color',[1 0.5 0]);

plot3([x2(2\*i),fx2(2\*i)],[y2(2\*i),fy2(2\*i)],[z(2\*i),fz2(2\*i)],'Color',[1 0.5 0]);

plot3([fx2(2\*i-1),fx2(2\*i)],[fy2(2\*i-1),fy2(2\*i)],[fz2(2\*i-1),fz2(2\*i)],'Color',[1 0.5 0]);

end

hold on

fx3(1)=x3(1)-dx(1);

fy3(1)=y3(1);

fz3(1)=-h;

fx3(2)=x3(2)-dx(1);

fy3(2)=y3(2);

fz3(2)=-h;

for i=2:10

fx3(2\*i-1)=-l(i)/sqrt((gx+x3(2\*i-1))^2+gz^2)\*(gx+x3(2\*i-1))+x3(2\*i-1);

fy3(2\*i-1)=y3(2\*i-1);

fz3(2\*i-1)=l(i)/sqrt((gx+x3(2\*i-1))^2+gz^2)\*gz;

fx3(2\*i)=-l(i)/sqrt((gx+x3(2\*i))^2+gz^2)\*(gx+x3(2\*i))+x3(2\*i);

fy3(2\*i)=y3(2\*i);

fz3(2\*i)=l(i)/sqrt((gx+x3(2\*i))^2+gz^2)\*gz;

end

for i=1:10

plot3([x3(2\*i-1),fx3(2\*i-1)],[y3(2\*i-1),fy3(2\*i-1)],[z(2\*i-1),fz3(2\*i-1)],'Color',[1 0.5 0]);

plot3([x3(2\*i),fx3(2\*i)],[y3(2\*i),fy3(2\*i)],[z(2\*i),fz3(2\*i)],'Color',[1 0.5 0]);

plot3([fx3(2\*i-1),fx3(2\*i)],[fy3(2\*i-1),fy3(2\*i)],[fz3(2\*i-1),fz3(2\*i)],'Color',[1 0.5 0]);

end

hold on

fx4(1)=x4(1)+dx(1);

fy4(1)=y4(1);

fz4(1)=-h;

fx4(2)=x4(2)+dx(1);

fy4(2)=y4(2);

fz4(2)=-h;

for i=2:10

fx4(2\*i-1)=l(i)/sqrt((gx-x4(2\*i-1))^2+gz^2)\*(gx-x4(2\*i-1))+x4(2\*i-1);

fy4(2\*i-1)=y4(2\*i-1);

fz4(2\*i-1)=l(i)/sqrt((gx-x4(2\*i-1))^2+gz^2)\*gz;

fx4(2\*i)=l(i)/sqrt((gx-x4(2\*i))^2+gz^2)\*(gx-x4(2\*i))+x4(2\*i);

fy4(2\*i)=y4(2\*i);

fz4(2\*i)=l(i)/sqrt((gx-x4(2\*i))^2+gz^2)\*gz;

end

for i=11:20

curvex(i)=fx4(2\*(21-i))+height\*sin1(21-i);

curvey(i)=fy4(2\*(21-i));

curvez(i)=fz4(2\*(21-i))+3\*sqrt(1-sin1(21-i)^2);

end

for i=1:10

plot3([x4(2\*i-1),fx4(2\*i-1)],[y4(2\*i-1),fy4(2\*i-1)],[z(2\*i-1),fz4(2\*i-1)],'Color',[1 0.5 0]);

plot3([x4(2\*i),fx4(2\*i)],[y4(2\*i),fy4(2\*i)],[z(2\*i),fz4(2\*i)],'Color',[1 0.5 0]);

plot3([fx4(2\*i-1),fx4(2\*i)],[fy4(2\*i-1),fy4(2\*i)],[fz4(2\*i-1),fz4(2\*i)],'Color',[1 0.5 0]);

end

plot3([fx2(2:2:20),fx3(20:-2:2)],[fy2(2:2:20),fy3(20:-2:2)],[fz2(2:2:20),fz3(20:-2:2)],'Color',[0 0 0.9]);

axis equal;

xlabel('X');

ylabel('Y');

zlabel('Z');

title('折叠椅展开的动态过程 完成');

hold off

%桌角线的拟合曲线与实际点

y=-25:0.1:25;

x=9.685e-5\*y.^4+1.278e-19\*y.^3-0.0174\*y.^2-7.025e-17\*y+11.49;

z=3.468e-5\*y.^4-3.986e-19\*y.^3-0.0498\*y.^2-1.364e-16\*y-32.36;

plot3(curvex,curvey,curvez,'ok')

hold on

plot3(x,y,z,'Color',[1 0.5 0]);

xlabel('X');

ylabel('Y');

zlabel('Z');

title('红线拟合曲线');

legend('边缘点','拟合曲线');

grid on

hold off

view(142.5,30);

%作直纹面的图像

implicitmesh(inline('x.^2+(((sqrt((115/4)^2-25^2)+2.5)\*z-25\*y)./(z-25)).^2-25.0247^2'),[-25,25],[0,30],[21,50]);

view(142.5,-30);

%非线性规划求解

options=optimset('MaxFunEvals',20000,'MaxIter',10000);

[x,fval,exitflag,output,lambda,grad,hessian]=fmincon(@Areaou,[pi/6,230,0.4],[],[],[],[],[0,147.9605,0.1],[pi/2,300,0.9],@oushuyueshu,options)

%约束条件

function [g,ceq]=oushuyueshu(x)

h=70;

r=40;

k=10;

d=2.5; %木条宽度

for j=1:k

ya(j)=sqrt(r^2-(k-j+1)^2\*d^2); %圆上坐标

m(j)=x(2)/2-ya(j); %木条长度

end

theta1=acos(h/m(1));

for j=1:k

thb(j)=atan((ya(j)-ya(1)-x(3)\*m(1)\*sin(theta1))/(-x(3)\*h)); %木条与垂线夹角

yc(j)=(ya(j)+ya(j)+m(j)\*sin(thb(j)))/2; %木条中心坐标

end

yhe=0;

mhe=0;

for j=1:k

yhe=yhe+yc(j)\*m(j);

mhe=mhe+m(j);

end

ycenter=yhe/mhe; %1/4区域重心坐标

EFchu=(1-x(3))\*m(1);

for j=1:k

EFmo(j)=sqrt((ya(j)+m(j)\*sin(thb(j))-ya(1)-x(3)\*m(1)\*sin(thb(j)))^2+(m(j)\*cos(thb(j))-x(3)\*h)^2);

end

EF=abs(EFchu-EFmo); %槽长

g(1)=-(mhe\*d\*(ycenter-ya(1))-pi\*r^2\*ya(1)/2);

g(2)=h/m(1)-1;

g(3:k+2)=EFmo-m;

g(k+3:2\*k+2)=-m;

g(2\*k+3)=ycenter-r;

g(2\*k+4)=-(x(3)\*m(1)+ya(1)-ya(k));

ceq=[];

%标准化及目标函数

function f=Areaou(x)

h=70;

k=10;

r=40;

d=r/sqrt(k^2+1);

kuan=2\*sqrt(r^2-d^2);

for j=1:k

ya(j)=sqrt(r^2-(k-j+1)^2\*d^2); %圆上坐标

m(j)=x(2)/2-ya(j); %木条长度

end

theta1=acos(h/m(1));

for j=1:k

thb(j)=atan((ya(j)-ya(1)-x(3)\*m(1)\*sin(theta1))/(-x(3)\*h)); %木条与垂线夹角

yc(j)=(ya(j)+ya(j)+m(j)\*sin(thb(j)))/2; %木条中心坐标

zc(j)=m(j)\*cos(thb(j))/2;

end

zhe=0;

mhe=0;

for j=1:k

zhe=zhe+zc(j)\*m(j);

mhe=mhe+m(j);

end

zcenter=zhe/mhe;

EFchu=(1-x(3))\*m(1);

for j=1:k

EFmo(j)=sqrt((ya(j)+m(j)\*sin(thb(j))-ya(1)-x(3)\*m(1)\*sin(thb(j)))^2+(m(j)\*cos(thb(j))-x(3)\*h)^2);

end

EF=abs(EFchu-EFmo); %槽长

%f=sum(EF);

%f=kuan\*x(2);

%f=-zcenter;

f=(kuan\*x(2)-6000)\*25+(-zcenter+50)\*(12000-6000);

%%%%%画椭圆

h=60; %高度

a=15; %长轴

b=25; %短轴

d=1.5; %木条宽度

k=a/d; %条数

l=x(1)-[0:8:72]; %木板长度

w=l/2; %半长

xe=(a-d/2):-d:d/2;

ye=sqrt(b^2\*(1-(xe/a).^2));

leg=w-ye; %腿长

theta1=acos(h/leg(1)); %外侧木条与垂线夹角

thb=atan((ye-ye(1)-x(2)\*leg(1)\*sin(theta1))/(-x(2)\*h));

yc=ye+leg.\*sin(thb)/2;

yhe=0;

leghe=0;

for j=1:k

yhe=yhe+yc(j)\*leg(j);

leghe=leghe+leg(j);

end

ycenter=yhe/leghe;

EFchu=leg(1)\*x(2)+ye(1)-ye;

EFmo=sqrt((leg(1)\*sin(theta1)+ye(1)-ye).^2+(h\*x(2))^2);

EF=abs(EFchu-EFmo);

g(1)=-(leghe\*d\*(ycenter-ye(1))-pi\*a\*b\*ye(1)/2);

g(2)=h/leg(1)-1;

g(3:k+2)=EF-leg;

g(k+3)=ycenter-b;

x11=xe+d/2;

x12=xe-d/2;

y11=ye;

y12=ye;

z11=zeros(size(xe));

z12=zeros(size(xe));

xd11=xe+d/2;

xd12=xe-d/2;

yd11=ye+leg.\*sin(thb);

yd12=ye+leg.\*sin(thb);

zd11=-leg.\*cos(thb);

zd12=-leg.\*cos(thb);

x21=-x11;

x22=-x12;

y21=y11;

y22=y12;

z21=zeros(size(xe));

z22=zeros(size(xe));

xd21=-xd11;

xd22=-xd12;

yd21=yd11;

yd22=yd12;

zd21=zd11;

zd22=zd12;

x31=-x11;

x32=-x12;

y31=-y11;

y32=-y12;

z31=zeros(size(xe));

z32=zeros(size(xe));

xd31=-xd11;

xd32=-xd12;

yd31=-yd11;

yd32=-yd12;

zd31=zd11;

zd32=zd12;

x41=x11;

x42=x12;

y41=-y11;

y42=-y12;

z41=zeros(size(xe));

z42=zeros(size(xe));

xd41=xd11;

xd42=xd12;

yd41=-yd11;

yd42=-yd12;

zd41=zd11;

zd42=zd12;

for i=1:k-1

plot3([x11(i),x12(i)],[y11(i),y12(i)],[z11(i),z12(i)],'Color',[1 0.5 0]);

plot3([x12(i),x11(i+1)],[y12(i),y11(i+1)],[z12(i),z11(i+1)],'Color',[1 0.5 0]);

plot3([x21(i),x22(i)],[y21(i),y22(i)],[z21(i),z22(i)],'Color',[1 0.5 0]);

plot3([x22(i),x21(i+1)],[y22(i),y21(i+1)],[z22(i),z21(i+1)],'Color',[1 0.5 0]);

plot3([x31(i),x32(i)],[y31(i),y32(i)],[z31(i),z32(i)],'Color',[1 0.5 0]);

plot3([x32(i),x31(i+1)],[y32(i),y31(i+1)],[z32(i),z31(i+1)],'Color',[1 0.5 0]);

plot3([x41(i),x42(i)],[y41(i),y42(i)],[z41(i),z42(i)],'Color',[1 0.5 0]);

plot3([x42(i),x41(i+1)],[y42(i),y41(i+1)],[z42(i),z41(i+1)],'Color',[1 0.5 0]);

hold on

end

plot3([x11(k),x12(k)],[y11(k),y12(k)],[z11(k),z12(k)],'Color',[1 0.5 0]);

plot3([x21(k),x22(k)],[y21(k),y22(k)],[z21(k),z22(k)],'Color',[1 0.5 0]);

plot3([x31(k),x32(k)],[y31(k),y32(k)],[z31(k),z32(k)],'Color',[1 0.5 0]);

plot3([x41(k),x42(k)],[y41(k),y42(k)],[z41(k),z42(k)],'Color',[1 0.5 0]);

plot3([x11(1),x41(1)],[y11(1),y41(1)],[z11(1),z41(1)],'Color',[1 0.5 0]);

for i=1:k

plot3([x11(i),xd11(i)],[y11(i),yd11(i)],[z11(i),zd11(i)],'Color',[1 0.5 0]);

plot3([x12(i),xd12(i)],[y12(i),yd12(i)],[z12(i),zd12(i)],'Color',[1 0.5 0]);

plot3([x21(i),xd21(i)],[y21(i),yd21(i)],[z21(i),zd21(i)],'Color',[1 0.5 0]);

plot3([x22(i),xd22(i)],[y22(i),yd22(i)],[z22(i),zd22(i)],'Color',[1 0.5 0]);

plot3([x31(i),xd31(i)],[y31(i),yd31(i)],[z31(i),zd31(i)],'Color',[1 0.5 0]);

plot3([x32(i),xd32(i)],[y32(i),yd32(i)],[z32(i),zd32(i)],'Color',[1 0.5 0]);

plot3([x41(i),xd41(i)],[y41(i),yd41(i)],[z41(i),zd41(i)],'Color',[1 0.5 0]);

plot3([x42(i),xd42(i)],[y42(i),yd42(i)],[z42(i),zd42(i)],'Color',[1 0.5 0]);

plot3([xd11(i),xd12(i)],[yd11(i),yd12(i)],[zd11(i),zd12(i)],'Color',[1 0.5 0]);

plot3([xd21(i),xd22(i)],[yd21(i),yd22(i)],[zd21(i),zd22(i)],'Color',[1 0.5 0]);

plot3([xd31(i),xd32(i)],[yd31(i),yd32(i)],[zd31(i),zd32(i)],'Color',[1 0.5 0]);

plot3([xd41(i),xd42(i)],[yd41(i),yd42(i)],[zd41(i),zd42(i)],'Color',[1 0.5 0]);

end

hold off

%%%%%%%%%%%%%%%%55

%%%%%%%%%%%%%%%%%%%% 画菱形

%%%%%%%%%%%%%%%%%%

h=60; %高度

a=25; %长轴

b=50; %短轴

d=2.5; %木条宽度

k=a/d; %条数

l=x(1); %木板长度

w=l/2; %半长

xe=(a-d/2):-d:d/2;

ye=-xe\*b/a+b;

leg=w-ye; %腿长

theta1=acos(h/leg(1)); %外侧木条与垂线夹角

thb=atan((ye-ye(1)-x(2)\*leg(1)\*sin(theta1))/(-x(2)\*h));

yc=ye+leg.\*sin(thb)/2;

yhe=0;

leghe=0;

for j=1:k

yhe=yhe+yc(j)\*leg(j);

leghe=leghe+leg(j);

end

ycenter=yhe/leghe;

EFchu=leg(1)\*x(2)+ye(1)-ye;

EFmo=sqrt((leg(1)\*sin(theta1)+ye(1)-ye).^2+(h\*x(2))^2);

EF=abs(EFchu-EFmo);

g(1)=-(leghe\*d\*(ycenter-ye(1))-pi\*a\*b\*ye(1)/2);

g(2)=h/leg(1)-1;

g(3:k+2)=EF-leg;

g(k+3)=ycenter-b;

x11=xe+d/2;

x12=xe-d/2;

y11=ye;

y12=ye;

z11=zeros(size(xe));

z12=zeros(size(xe));

xd11=xe+d/2;

xd12=xe-d/2;

yd11=ye+leg.\*sin(thb);

yd12=ye+leg.\*sin(thb);

zd11=-leg.\*cos(thb);

zd12=-leg.\*cos(thb);

x21=-x11;

x22=-x12;

y21=y11;

y22=y12;

z21=zeros(size(xe));

z22=zeros(size(xe));

xd21=-xd11;

xd22=-xd12;

yd21=yd11;

yd22=yd12;

zd21=zd11;

zd22=zd12;

x31=-x11;

x32=-x12;

y31=-y11;

y32=-y12;

z31=zeros(size(xe));

z32=zeros(size(xe));

xd31=-xd11;

xd32=-xd12;

yd31=-yd11;

yd32=-yd12;

zd31=zd11;

zd32=zd12;

x41=x11;

x42=x12;

y41=-y11;

y42=-y12;

z41=zeros(size(xe));

z42=zeros(size(xe));

xd41=xd11;

xd42=xd12;

yd41=-yd11;

yd42=-yd12;

zd41=zd11;

zd42=zd12;

for i=1:k-1

plot3([x11(i),x12(i)],[y11(i),y12(i)],[z11(i),z12(i)],'Color',[1 0.5 0]);

plot3([x12(i),x11(i+1)],[y12(i),y11(i+1)],[z12(i),z11(i+1)],'Color',[1 0.5 0]);

plot3([x21(i),x22(i)],[y21(i),y22(i)],[z21(i),z22(i)],'Color',[1 0.5 0]);

plot3([x22(i),x21(i+1)],[y22(i),y21(i+1)],[z22(i),z21(i+1)],'Color',[1 0.5 0]);

plot3([x31(i),x32(i)],[y31(i),y32(i)],[z31(i),z32(i)],'Color',[1 0.5 0]);

plot3([x32(i),x31(i+1)],[y32(i),y31(i+1)],[z32(i),z31(i+1)],'Color',[1 0.5 0]);

plot3([x41(i),x42(i)],[y41(i),y42(i)],[z41(i),z42(i)],'Color',[1 0.5 0]);

plot3([x42(i),x41(i+1)],[y42(i),y41(i+1)],[z42(i),z41(i+1)],'Color',[1 0.5 0]);

hold on

end

plot3([x11(k),x12(k)],[y11(k),y12(k)],[z11(k),z12(k)],'Color',[1 0.5 0]);

plot3([x21(k),x22(k)],[y21(k),y22(k)],[z21(k),z22(k)],'Color',[1 0.5 0]);

plot3([x31(k),x32(k)],[y31(k),y32(k)],[z31(k),z32(k)],'Color',[1 0.5 0]);

plot3([x41(k),x42(k)],[y41(k),y42(k)],[z41(k),z42(k)],'Color',[1 0.5 0]);

plot3([x11(1),x41(1)],[y11(1),y41(1)],[z11(1),z41(1)],'Color',[1 0.5 0]);

for i=1:k

plot3([x11(i),xd11(i)],[y11(i),yd11(i)],[z11(i),zd11(i)],'Color',[1 0.5 0]);

plot3([x12(i),xd12(i)],[y12(i),yd12(i)],[z12(i),zd12(i)],'Color',[1 0.5 0]);

plot3([x21(i),xd21(i)],[y21(i),yd21(i)],[z21(i),zd21(i)],'Color',[1 0.5 0]);

plot3([x22(i),xd22(i)],[y22(i),yd22(i)],[z22(i),zd22(i)],'Color',[1 0.5 0]);

plot3([x31(i),xd31(i)],[y31(i),yd31(i)],[z31(i),zd31(i)],'Color',[1 0.5 0]);

plot3([x32(i),xd32(i)],[y32(i),yd32(i)],[z32(i),zd32(i)],'Color',[1 0.5 0]);

plot3([x41(i),xd41(i)],[y41(i),yd41(i)],[z41(i),zd41(i)],'Color',[1 0.5 0]);

plot3([x42(i),xd42(i)],[y42(i),yd42(i)],[z42(i),zd42(i)],'Color',[1 0.5 0]);

plot3([xd11(i),xd12(i)],[yd11(i),yd12(i)],[zd11(i),zd12(i)],'Color',[1 0.5 0]);

plot3([xd21(i),xd22(i)],[yd21(i),yd22(i)],[zd21(i),zd22(i)],'Color',[1 0.5 0]);

plot3([xd31(i),xd32(i)],[yd31(i),yd32(i)],[zd31(i),zd32(i)],'Color',[1 0.5 0]);

plot3([xd41(i),xd42(i)],[yd41(i),yd42(i)],[zd41(i),zd42(i)],'Color',[1 0.5 0]);

end

hold off