```
%g=[2 x1 x2 y1 y2 D_gauche D_droite];

mm=1e-3;
a=5*mm;
b=10*mm;
c=5*mm;
d=5*mm;
l=60*mm;


g=[];
%conducteur 1
x1=-a-b/2;x2=-b/2;y1=0;y2=0;
g0=[2 x1 x2 y1 y2  2 1]';g=[g g0];
x1=-b/2;x2=-b/2;y1=0;y2=a;
g0=[2 x1 x2 y1 y2  2 1]';g=[g g0];
x1=-b/2;x2=-b/2-a;y1=a;y2=a;
g0=[2 x1 x2 y1 y2  2 1]';g=[g g0];
x1=-b/2-a;x2=-b/2-a;y1=a;y2=0;
g0=[2 x1 x2 y1 y2  2 1]';g=[g g0];

%conducteur 2
x1=b/2;x2=b/2+a;y1=0;y2=0;
g0=[2 x1 x2 y1 y2  3 1]';g=[g g0];
x1=b/2+a;x2=b/2+a;y1=0;y2=a;
g0=[2 x1 x2 y1 y2  3 1]';g=[g g0];
x1=b/2+a;x2=b/2;y1=a;y2=a;
g0=[2 x1 x2 y1 y2  3 1]';g=[g g0];
x1=b/2;x2=b/2;y1=a;y2=0;
g0=[2 x1 x2 y1 y2  3 1]';g=[g g0];


% la plaque
x1=-l/2;x2=l/2;y1=a+d;y2=a+d;
g0=[2 x1 x2 y1 y2  4 1]';g=[g g0];
x1=l/2;x2=l/2;y1=a+d;y2=a+d+c;
g0=[2 x1 x2 y1 y2  4 1]';g=[g g0];
x1=l/2;x2=-l/2;y1=a+d+c;y2=a+d+c;
g0=[2 x1 x2 y1 y2  4 1]';g=[g g0];
x1=-l/2;x2=-l/2;y1=a+d+c;y2=a+d;
g0=[2 x1 x2 y1 y2  4 1]';g=[g g0];
%%
% _ITALIC TEXT_
%domaine externe
l2=2*l;l3=l;l4=l;
x1=-l2/2;x2=l2/2;y1=-l3;y2=-l3;
g0=[2 x1 x2 y1 y2  1 0]';g=[g g0];
x1=l2/2;x2=l2/2;y1=-l3;y2=l4;
g0=[2 x1 x2 y1 y2  1 0]';g=[g g0];
x1=l2/2;x2=-l2/2;y1=l4;y2=l4;
g0=[2 x1 x2 y1 y2  1 0]';g=[g g0];
x1=-l2/2;x2=-l2/2;y1=l4;y2=-l3;
g0=[2 x1 x2 y1 y2  1 0]';g=[g g0];
```

```
pdegplot(g);axis equal;

[p,e,t]=initmesh(g);
[p,e,t]=refinemesh(g,p,e,t);

%p les corrdonées de points (noeuds) du maillage p(1,:)->x,   p(:,2)-> y
% t indices de triangle t(1,:) t(2,:) t(3,:) ,  t(4,:) indice du domaine
% e : edges,  les arrêtes

pdemesh(p,e,t);

nn=size(p,2);
nt=size(t,2);
aire=pdetrg(p,t);% surface de tous les triangles
pm(1,:)=(p(1,t(1,:))+p(1,t(2,:))+p(1,t(3,:)))/3;
pm(2,:)=(p(2,t(1,:))+p(2,t(2,:))+p(2,t(3,:)))/3;
%
% hold on;
% for i=1:nn
%     x0=p(1,i);y0=p(2,i);
%     text(x0,y0,num2str(i))
% end
%
%
% for i=1:nt
%     x0=pm(1,i);y0=pm(2,i);
%     text(x0,y0,num2str(i))
% end


% introduction des constantes physiques   sigma mu Js

sig=zeros(1,nt);
nu=zeros(1,nt);
js=zeros(1,nt);

mu0=pi*4e-7;
nu0=1/mu0;
sigma=58e6;
fr=variable;
omega=2*pi*fr;
J0=2e6;

nu(:)=nu0;

%domaine de la plaque
id4=find(t(4,:)==4);
sig(id4)=1i*omega*sigma;

%domaine conducteur 1
id2=find(t(4,:)==2);
js(id2)=J0;

%domaine conducteur 2
id3=find(t(4,:)==3);
```

```
js(id3)=-J0;


[K,M,F]=assema(p,t,nu,sig,js);

K=K+M;

% condition au limite

ix=find( e(6,:)==0 |  e(7,:)==0 );
N1=e(1,ix);
N2=e(2,ix);
id_0=[N1 N2];
size_diric_A=length(id_0);
K(id_0,:)=zeros(size(id_0,2),size(K,2));
K(:,id_0)=zeros(size(K,2),size(id_0,2));
for l=1:size(id_0,2)
K(id_0(l),id_0(l))=1;
F(id_0(l))=0;
end


% resolution de K.A=F
A=K\F;% resolution du sytem K*A=F



% exploitation
figure;pdegplot(g);axis equal;hold on;pdecont(p,t,real(A));


% calcul de la force J/\B

% le A est au noeuds

% le A au centre des triangles

Am=(A(t(1,:))+A(t(2,:))+A(t(3,:)))/3;

Jind=-sig.*Am.';

[dAx,dAy]=pdegrad(p,t,A);

Bx=dAy;  By=-dAx;

hold on; quiver(pm(1,:),pm(2,:),real(Bx),real(By))

Fx=-sum(By.*conj(Jind).*aire)
Fy=sum(Bx.*conj(Jind).*aire)
```