

Mesh definition

Define points

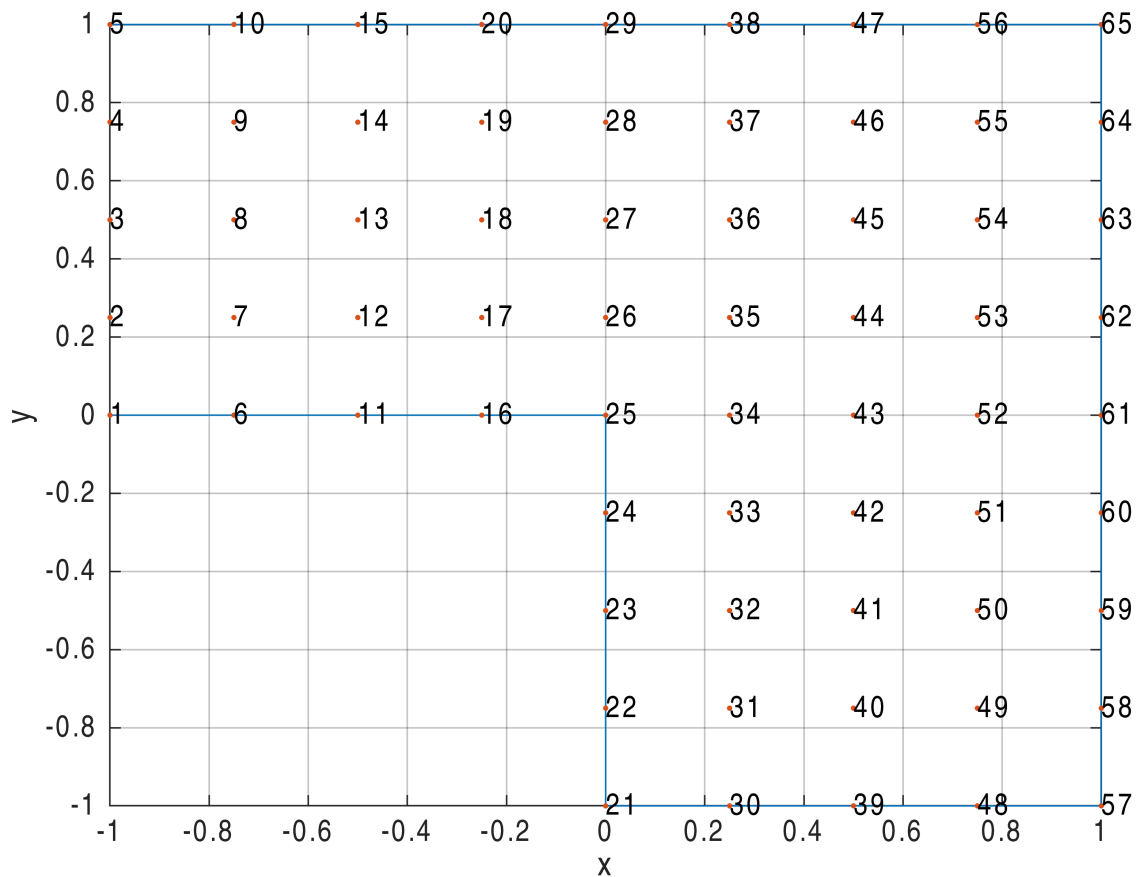
```
p = [-1 0
      0 0
      0 -1
      1 -1
      1 1
      -1 1]
```

```
p = 6x2
    -1     0
     0     0
     0    -1
     1    -1
     1     1
    -1     1
```

```
figure(1)
clf
plot(p(:,1), p(:,2))
grid on
xlabel('x')
ylabel('y')

dd = 0.25;
xv = -1:dd:1;
yv = -1:dd:1;

pp = [];
for i=1:length(xv)
    for j=1:length(yv)
        if xv(i)<0 && yv(j)<0
            continue
        end
        pp(end+1,:) = [xv(i) yv(j)];
    end
end
hold on
plot(pp(:,1), pp(:,2), '.')
for i=1:size(pp,1)
    text(pp(i,1), pp(i,2), num2str(i))
end
hold off
```



Define elements

```

% Upper left
elem = [];
ss = 1/dd+1;
s = 1/dd-1;
for j=1:s+1
    for i=1:s
        elem(end+1,:) = [(i-1)*ss+j i*ss+j (i-1)*ss+1+j i*ss+1+j];
    end
end

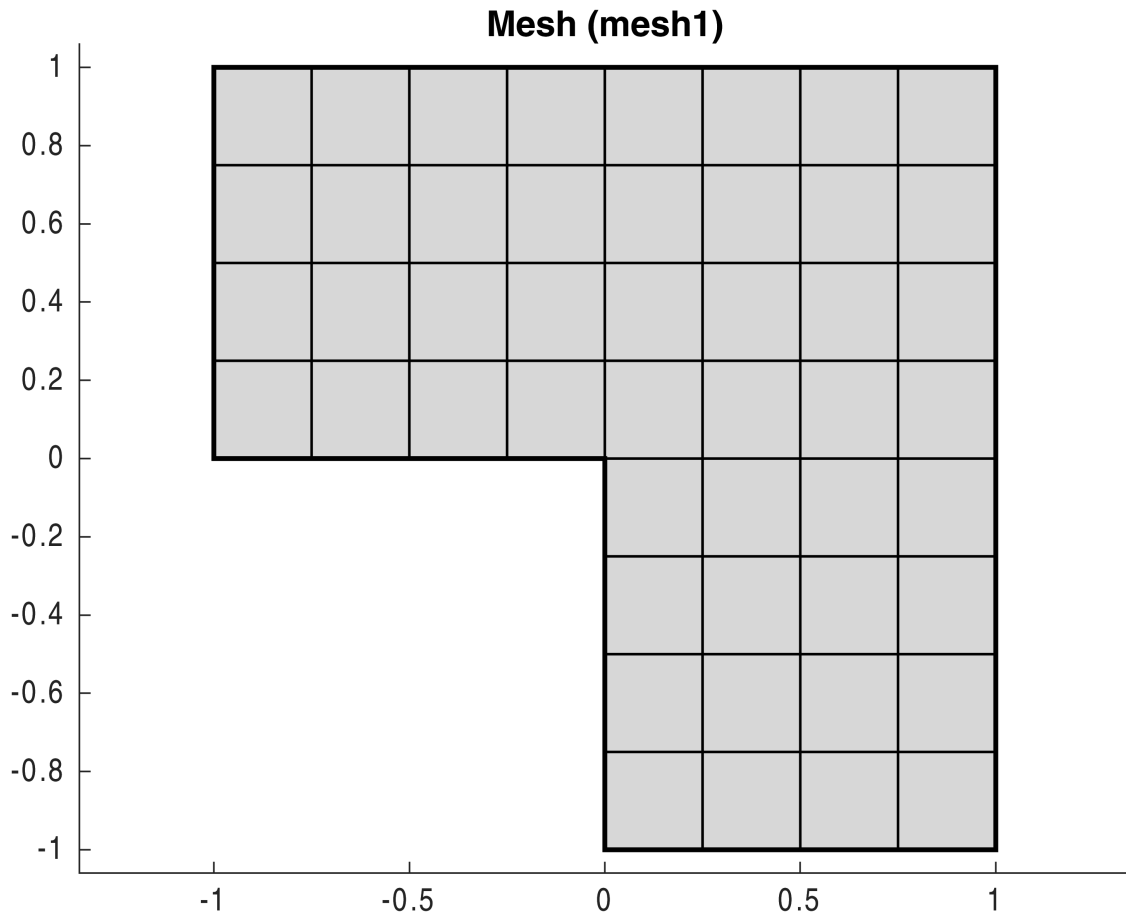
% right hand side
ss2 = 2*ss-1;
for j=1:ss2-1
    for i=1:s+1
        elem(end+1,:) = [(i-1)*ss2+ss*(ss-1)+j i*ss2+ss*(ss-1)+j (i-1)*ss2+ss*(ss-1)+1+j i*ss2+ss*(ss-1)+1+j];
    end
end

% small strip in the middle
ss3 = (ss-1)*(ss-1);
for j=1:s+1
    elem(end+1,:) = [j+ss3-1 j+ss3+ss2-1 j+ss3 j+ss3+ss2];
end

```

Create mesh

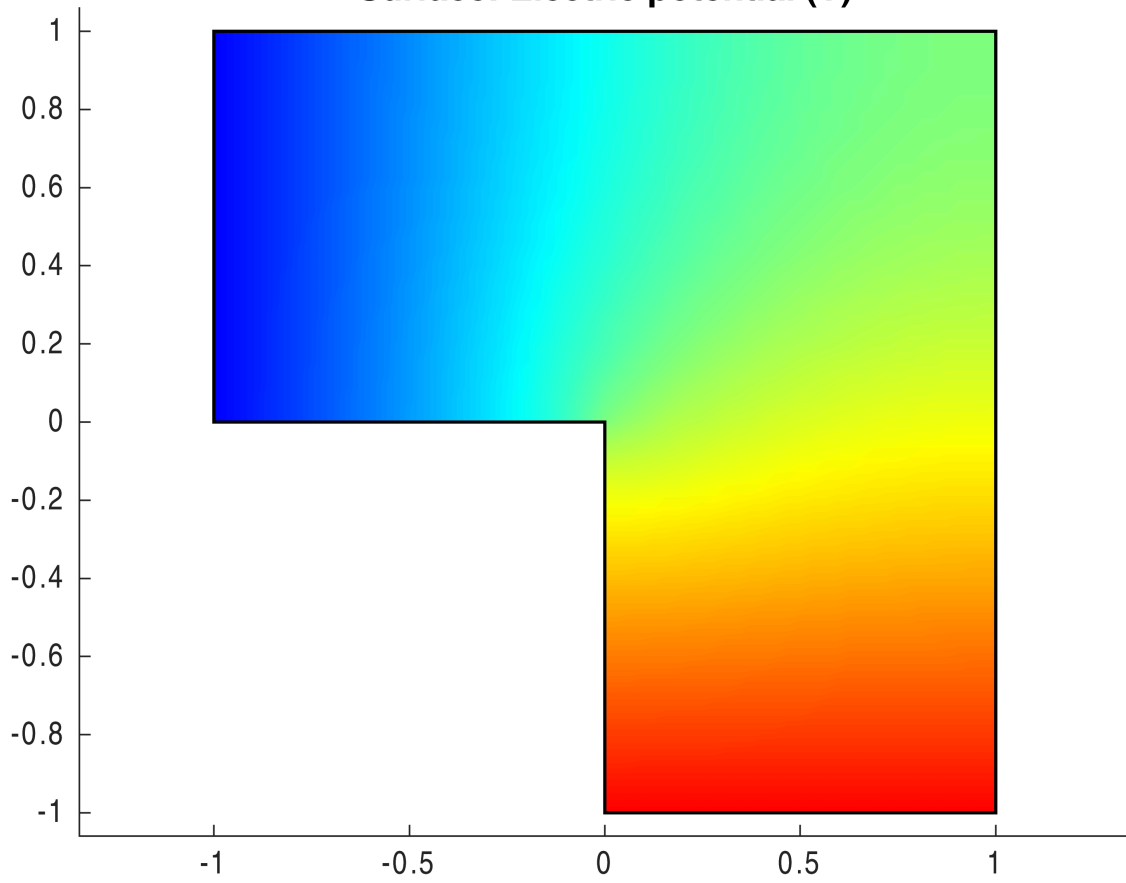
```
import com.comsol.model.util.*
ModelUtil.remove('MeshModel');
model = ModelUtil.create('MeshModel');
model.hist.disable
model.geom.create('geom1', 2);
model.mesh.create('mesh1', 'geom1');
model.mesh('mesh1').data().setVertex(pp');
model.mesh('mesh1').data().setElem('quad', elem'-1);
model.mesh('mesh1').data().createMesh;
mphmesh(model, 'mesh1')
```



Add physics

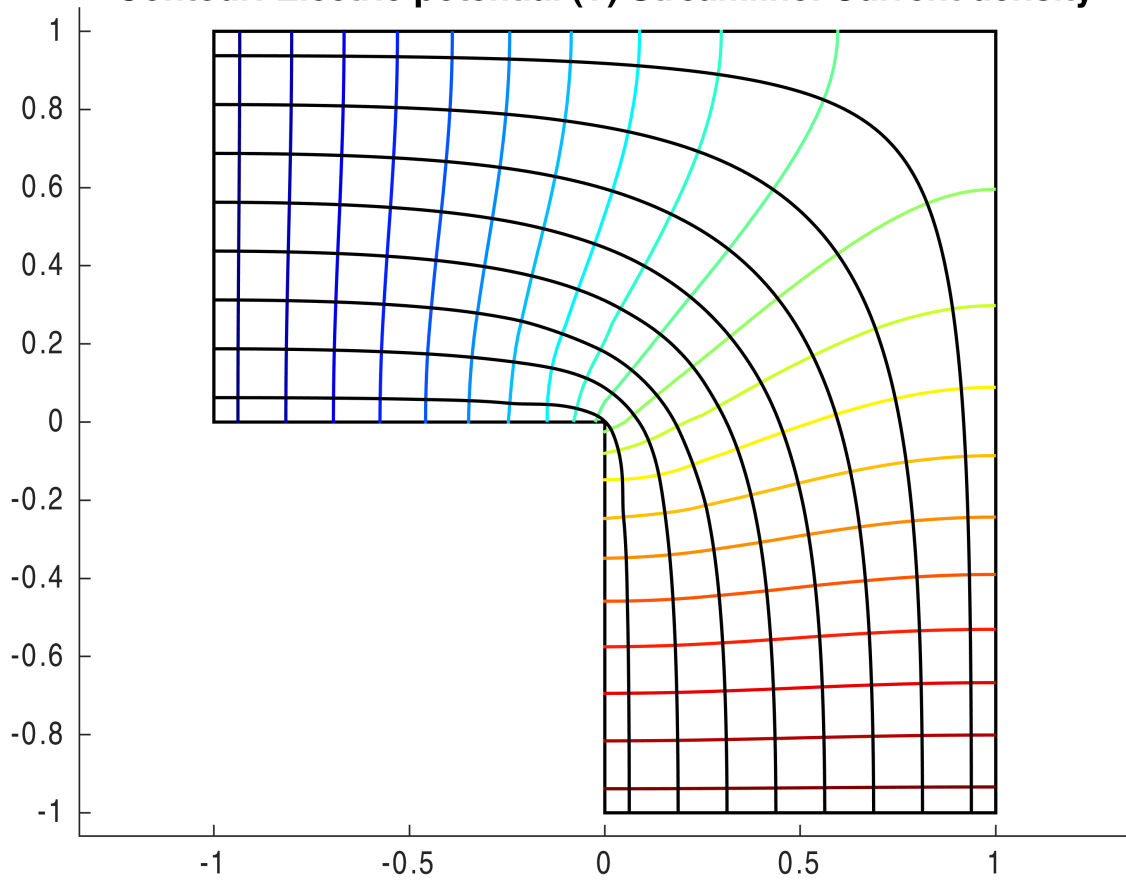
```
meshexample_addphysics
mphplot(model, 'pg1')
```

Surface: Electric potential (V)



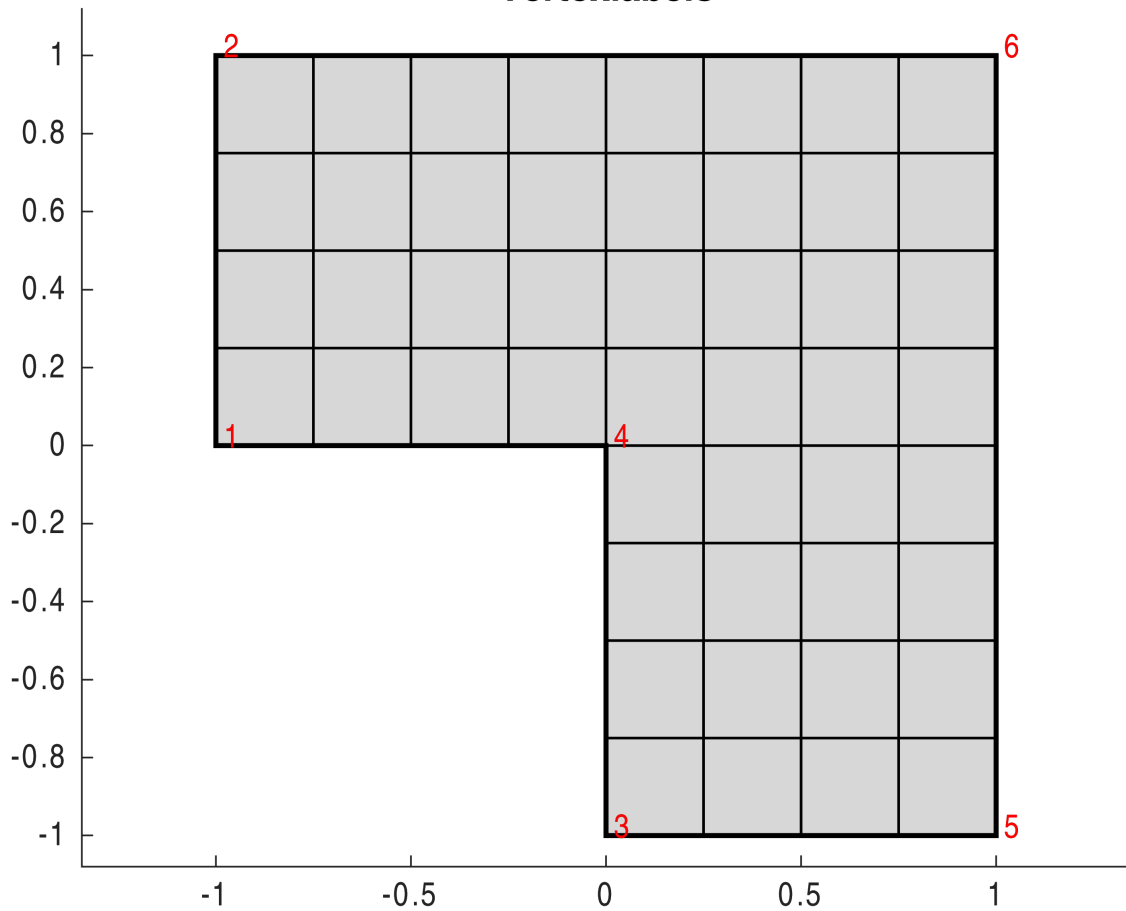
```
mphplot(model, 'pg2')
```

Contour: Electric potential (V) Streamline: Current density



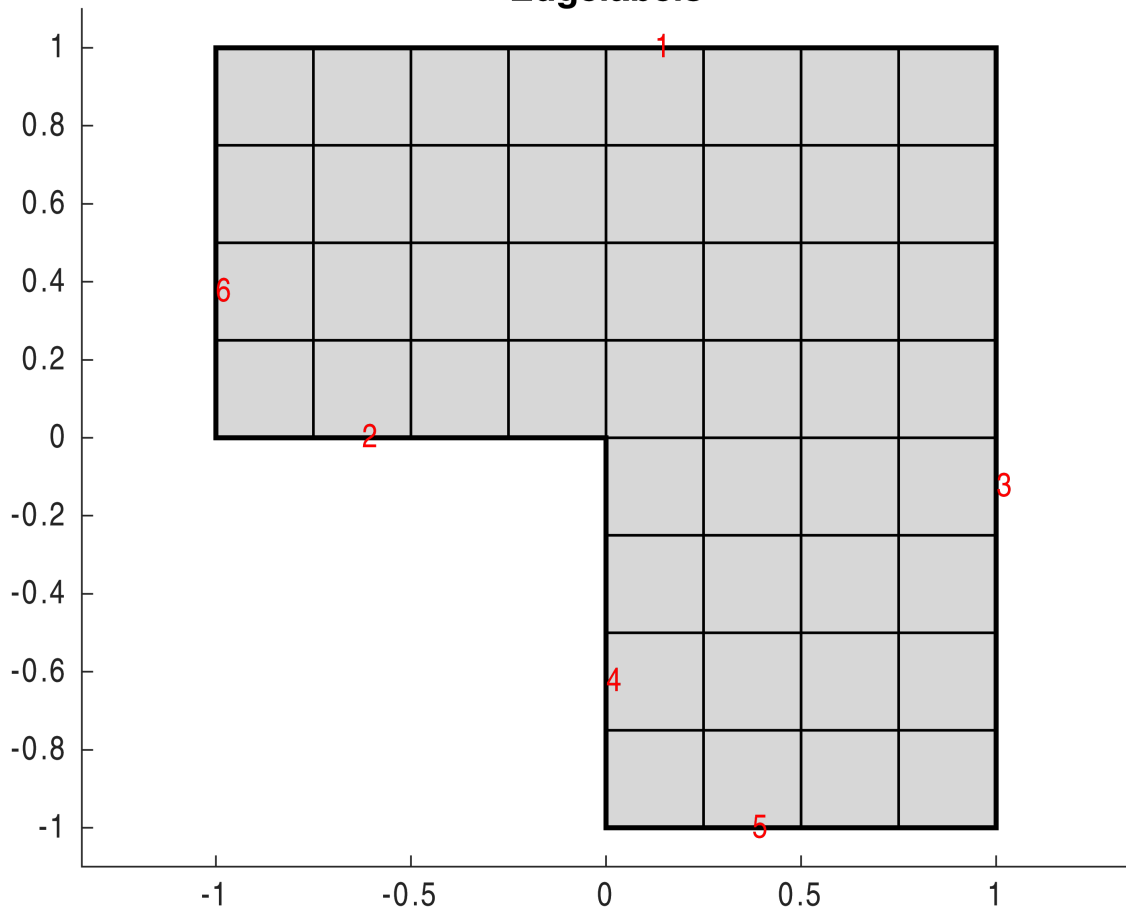
```
mphmesh(model, 'mesh1', 'vertexlabels', 'on', 'vertexlabelcolor', 'r')  
title('Vertexlabels')
```

Vertexlabels



```
mphmesh(model, 'mesh1', 'edgelabels', 'on', 'edgelabelscolor', 'red')  
title('Edgelabels')
```

Edgelabels



Save model

```
%mphsave(model, 'createdmesh')
```