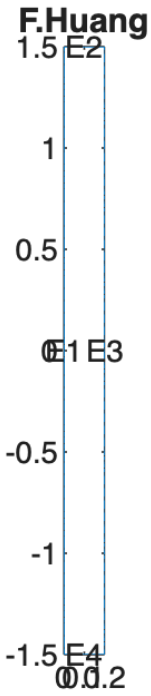
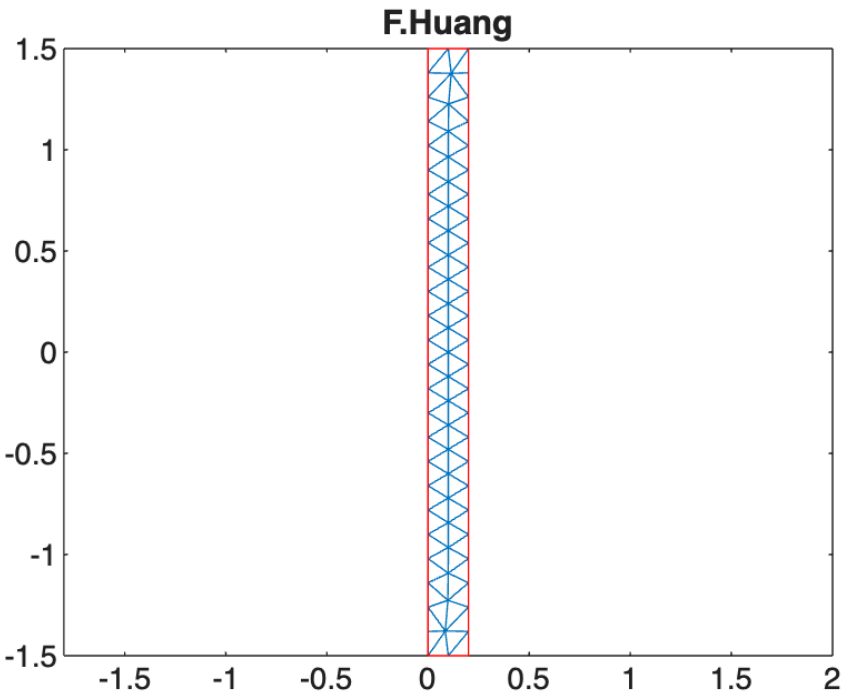
```
% Plot geometry of model
g = decsg([3 4 0 0 .2 .2 -1.5 1.5 1.5 -1.5]');

figure
pdegplot(g,EdgeLabels="on")
title('F.Huang')
axis equal
```

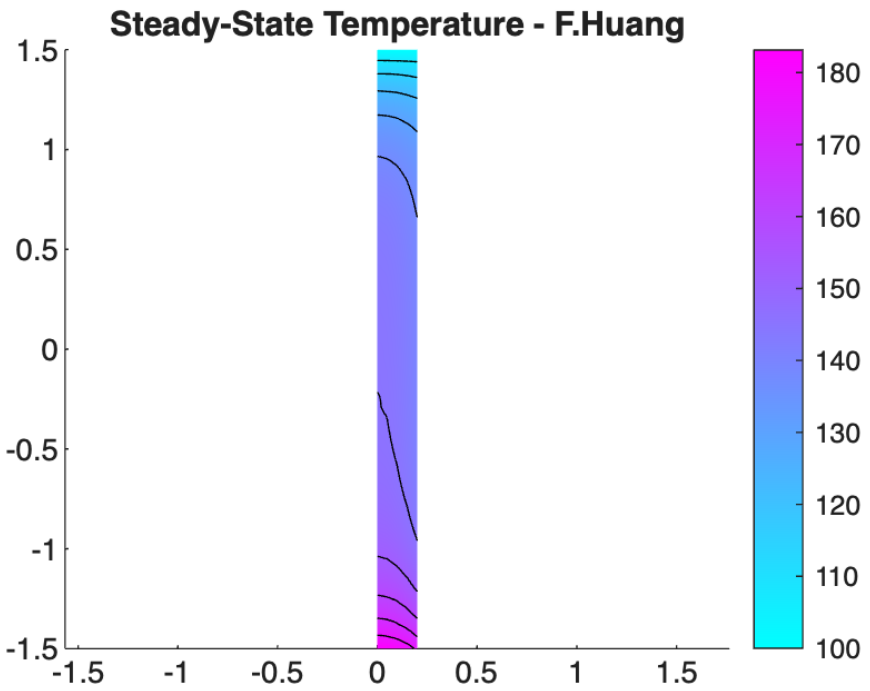



```
% Creation of Rod with Meshes
model = femodel(AnalysisType="thermalSteady", ...
                Geometry=g);

model.PlanarType = "axisymmetric";

k = 40; % Thermal conductivity, W/(m*C)
rho = 7800; % Density, kg/m^3
cp = 500; % Specific heat, W*s/(kg*C)
q = 20000; % Heat source, W/m^3
model.MaterialProperties = ...
    materialProperties(ThermalConductivity=k);

model.FaceLoad = faceLoad(Heat=q);

model.EdgeBC(2)=edgeBC(Temperature=100);
model.EdgeLoad(3) = ...
    edgeLoad(ConvectionCoefficient=50,...
             AmbientTemperature=100);
```

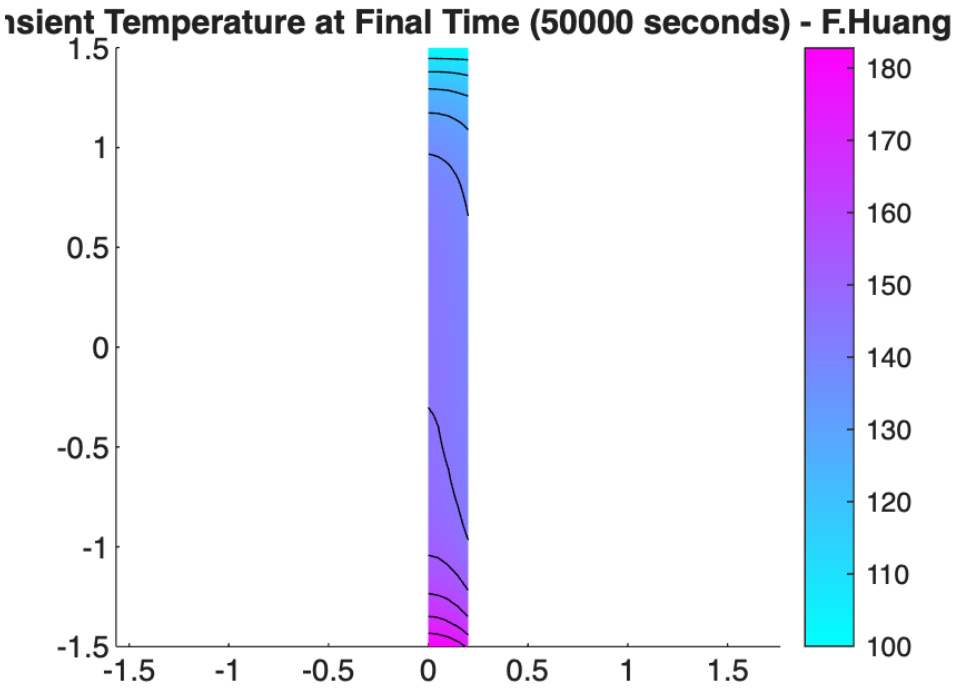
```
model.EdgeLoad(4) = edgeLoad(Heat=5000);
model = generateMesh(model);
figure
pdemesh(model)
title('F.Huang')
axis equal
```



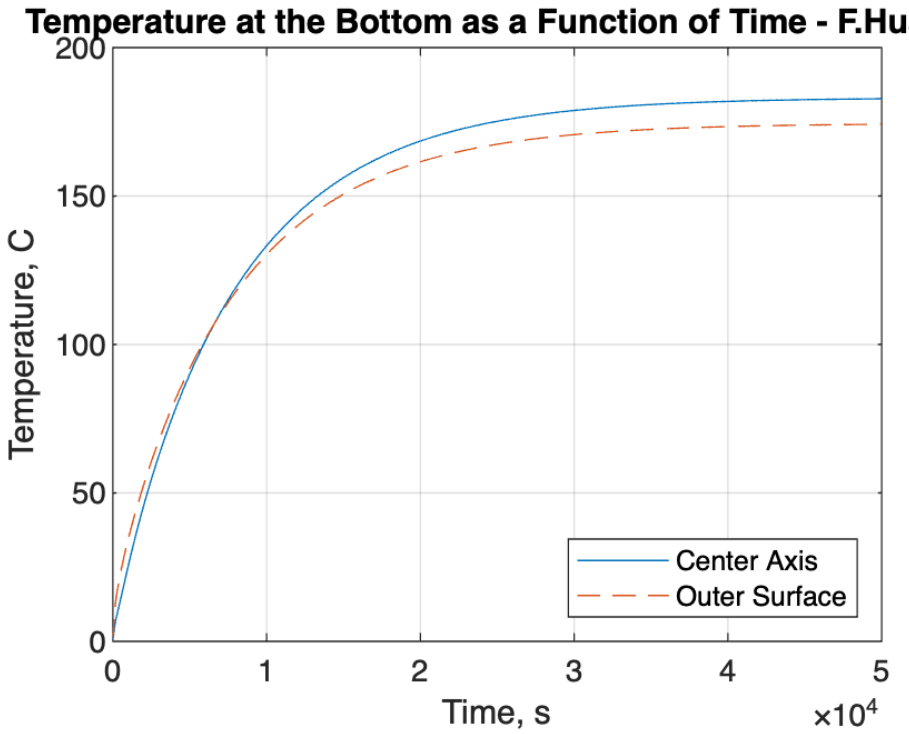

```
% Solved Steady State model
result = solve(model);
T = result.Temperature;
figure
pdeplot(result.Mesh,XYData=T,Contour="on")
axis equal
title("Steady-State Temperature - F.Huang")
```




```
% Transient Solution
model.AnalysisType = "thermalTransient";

model.MaterialProperties = ...
    materialProperties(ThermalConductivity=k,...
                       MassDensity=rho,...
                       SpecificHeat=cp);

model.FaceIC = faceIC(Temperature=0);

tfinal = 50000;
tlist = 0:100:tfinal;
result = solve(model,tlist);

T = result.Temperature;

figure
pdeplot(result.Mesh, ...
        XYData=T(:,end), ...
        Contour="on")
axis equal
title(sprintf(['Transient Temperature' ...
               ' at Final Time (%g seconds) - F.Huang'],tfinal))
```




```
Tcenter = interpolateTemperature(result,[0.0;-1.5],1:numel(tlist));
Touter = interpolateTemperature(result,[0.2;-1.5],1:numel(tlist));


figure
plot(tlist,Tcenter)
hold on
plot(tlist,Touter,"--")
title("Temperature at the Bottom as a Function of Time - F.Huang")
xlabel("Time, s")
ylabel("Temperature, C")
grid on
legend("Center Axis","Outer Surface","Location","SouthEast")
```


Temperature at the Bottom as a Function of Time - F.Huang
200
150
100
50
0
Temperature, C
0
1
2
3
4
5
Time, s
×10^4
Center Axis
Outer Surface