Problem info

Problem type: Transient Heat Transfer (integration time: 10 s.)
Geometry model class: Axisymmetric
Problem database file names:

- Problem: *inductor_heat.pbm*
- Geometry: *Inductor.mod*
- Material Data: *Inductor_heat.dht*
- Material Data 2 (library): *none*
- Electric circuit: *none*

Results taken from other problems:

- *Generated Heat: Inductor_magn.pbm*

Geometry model

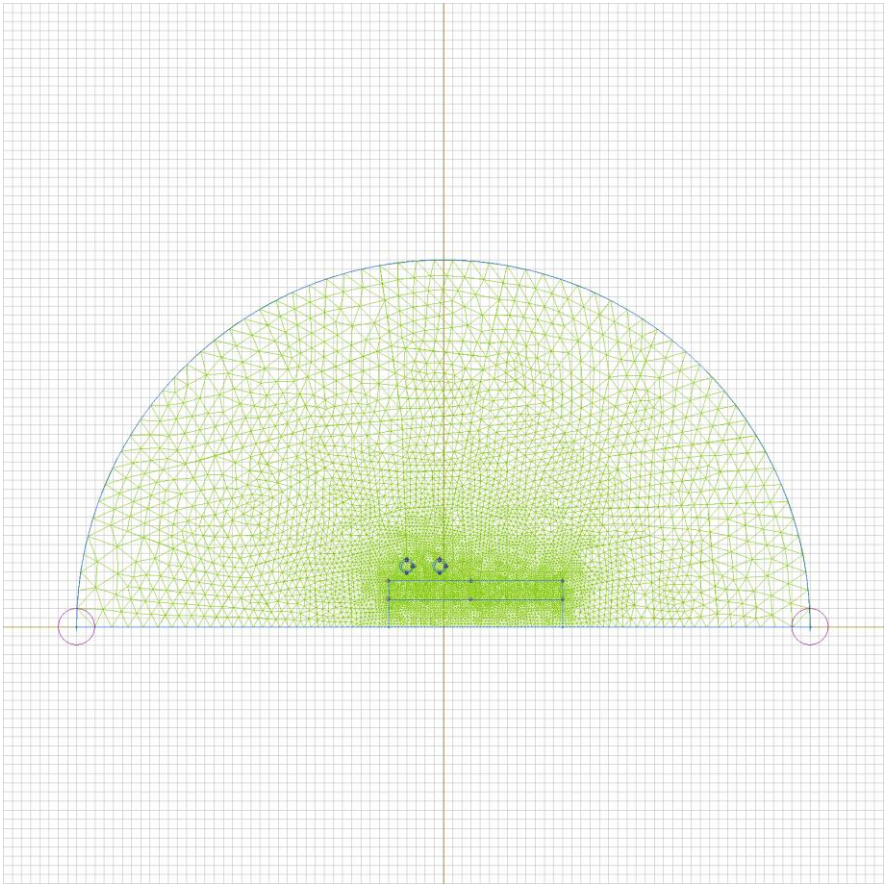


Table 1. Geometry model statistics

	With Label	Total
Blocks	4	7
Edges	2	26
Vertices	1	22

Number of nodes: 6194.

Labelled objects

There are following labelled objects in the geometry model (Material Data file could contain more labels, but only those labels that assigned to geometric objects are listed)

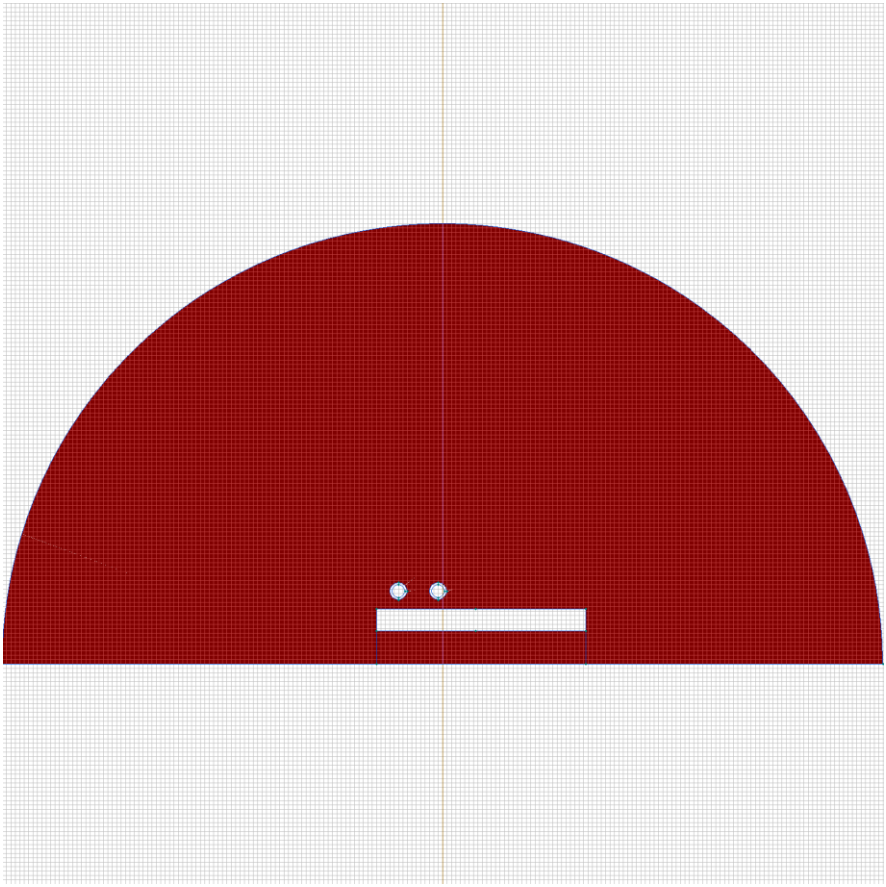
Blocks:	Edges:	Vertices:
• air • water • conductor • steel •	• water cooling • no field •	• fixed •

Detailed information about each label is listed below.

Labelled objects: block "air"

There are (2) objects with this label

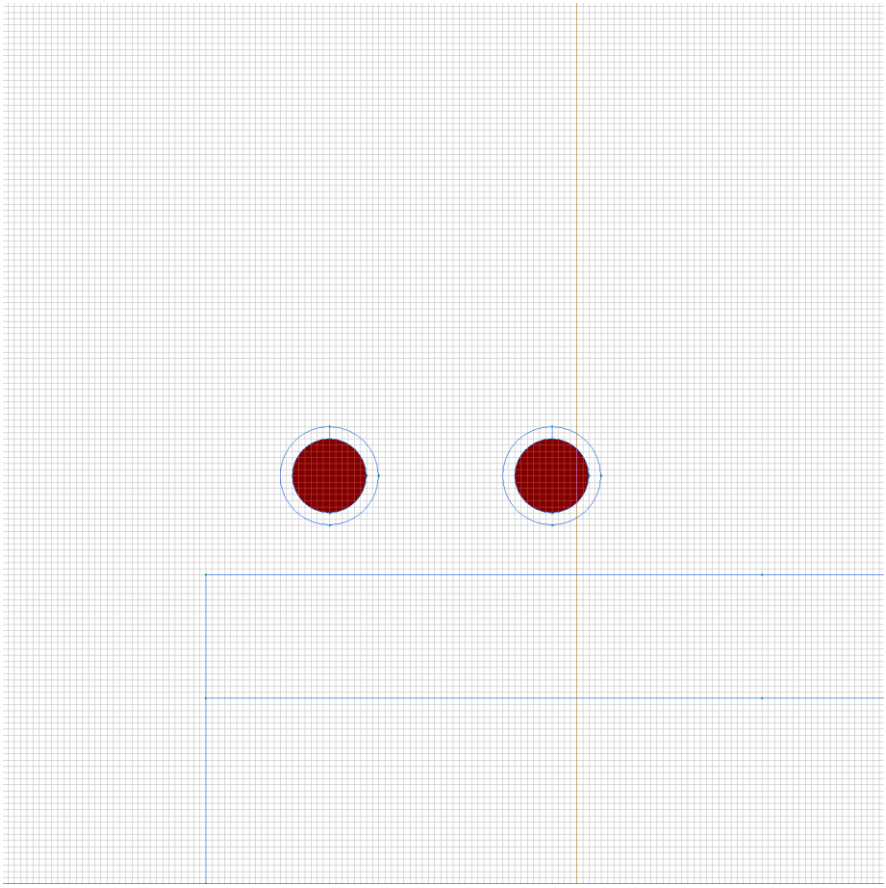
Thermal conductivity: lambda_x=1 [W/(K*m)], lambda_y=1 [W/(K*m)]



Labelled objects: block "water"

There are (2) objects with this label

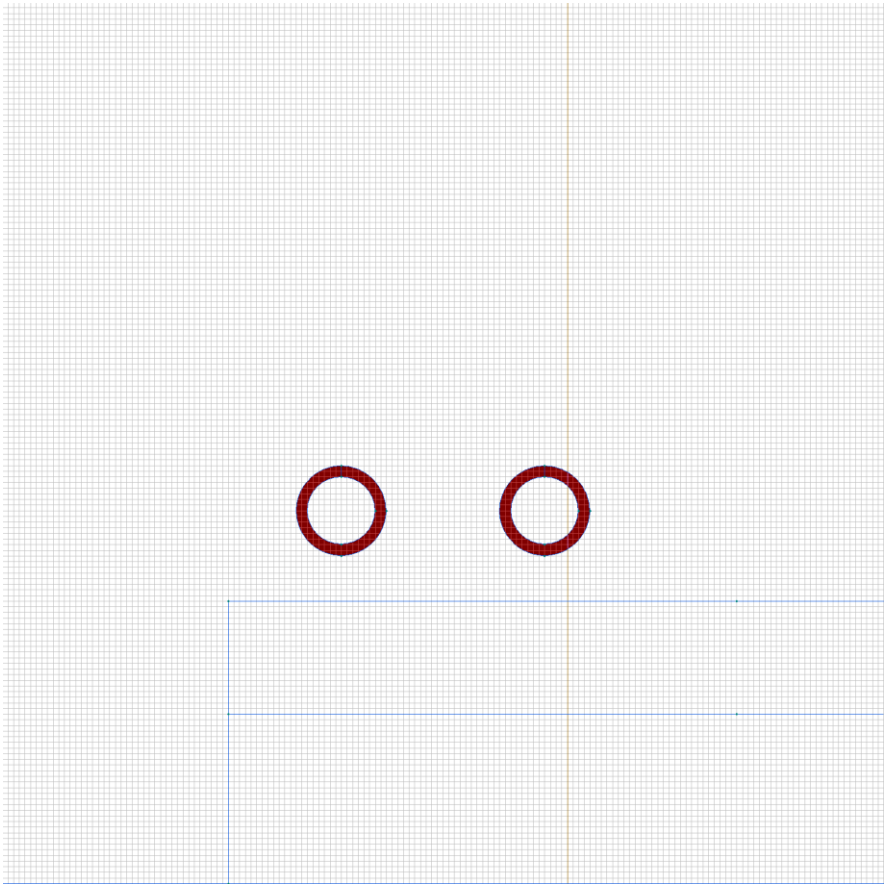
Thermal conductivity: lambda_x=0 [W/(K*m)], lambda_y=0 [W/(K*m)]



Labelled objects: block "conductor"

There are (2) objects with this label

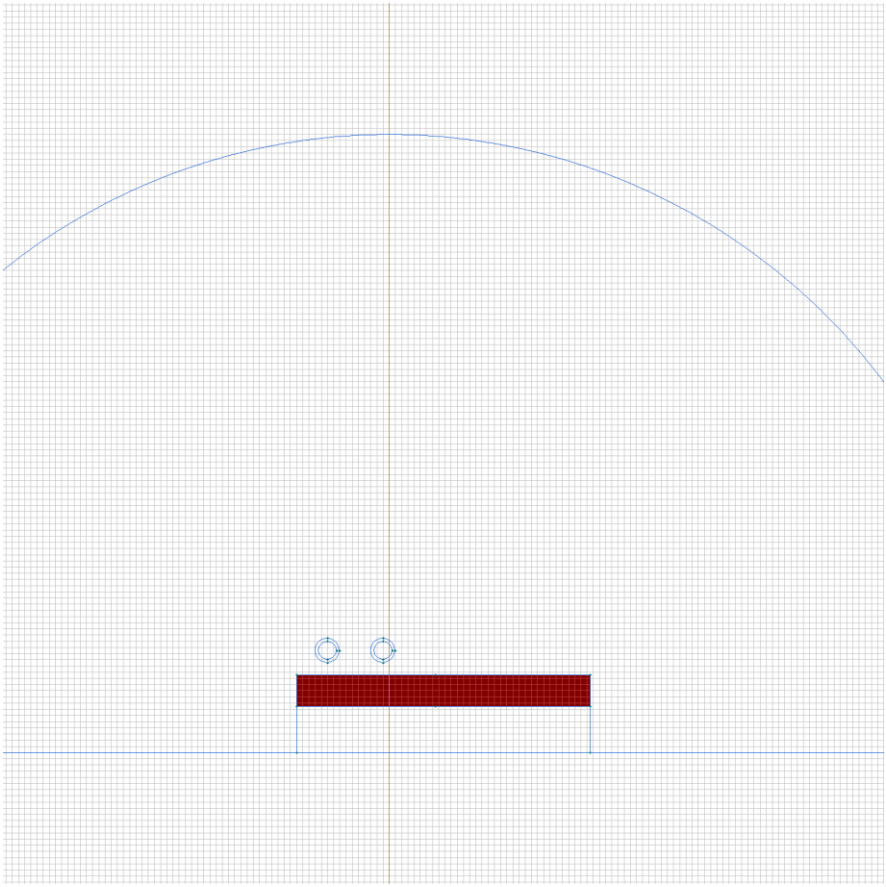
Thermal conductivity: lambda_x=380 [W/(K*m)], lambda_y=380 [W/(K*m)]
Specific heat: C=380 [J/(kg*K)]
Mass density: rho=8700 [kg/m3]



Labelled objects: block "steel"

There are (1) objects with this label

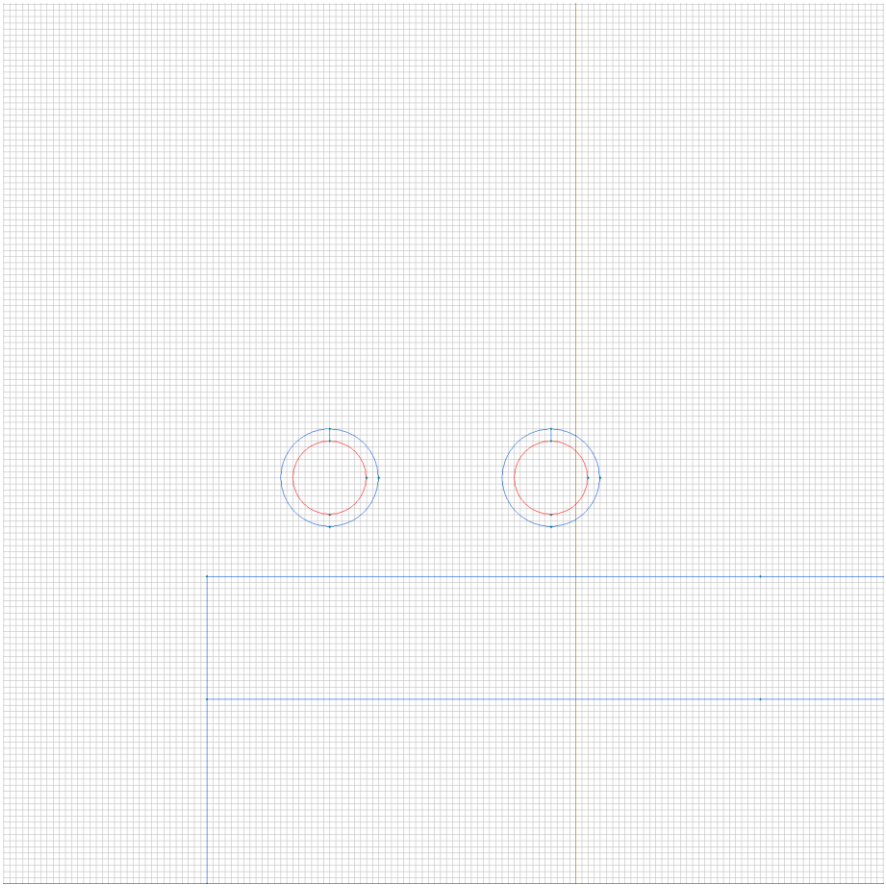
Thermal conductivity: lambda_x=20 [W/(K*m)], lambda_y=20 [W/(K*m)]
Specific heat: C=200 [J/(kg*K)]
Mass density: rho=7800 [kg/m3]



Labelled objects: edge "water cooling"

There are (6) objects with this label

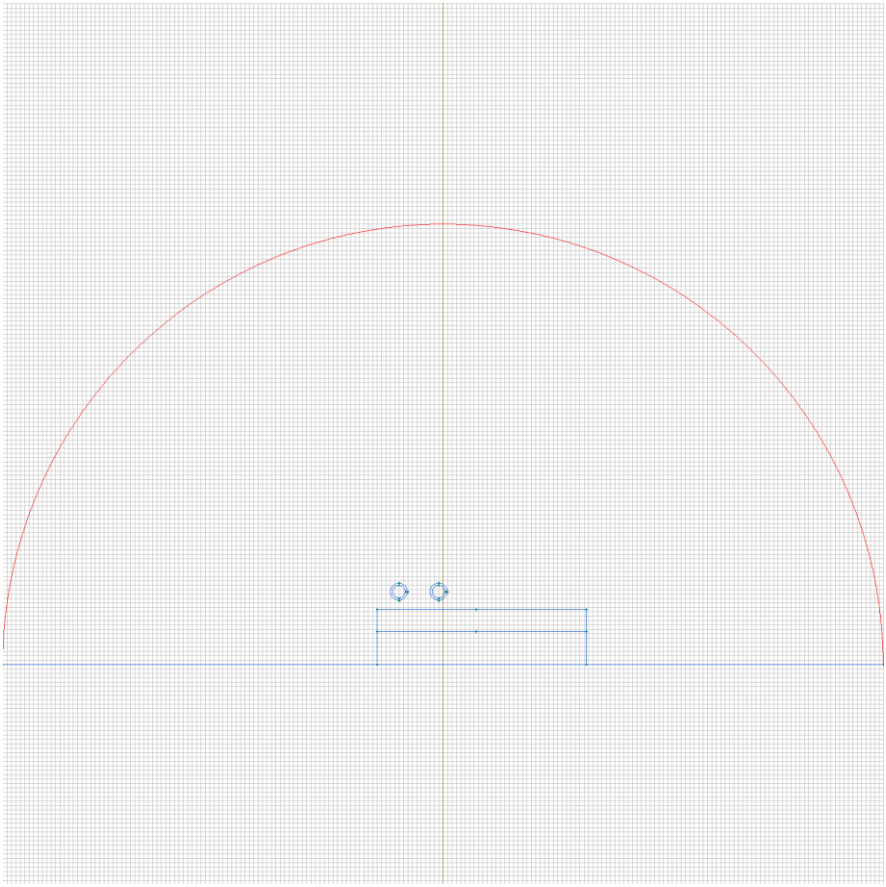
Convection: alpha=2000 [W/(K*m2)], temperature T0=273+20,K [K]



Labelled objects: edge "no field"

There are (1) objects with this label

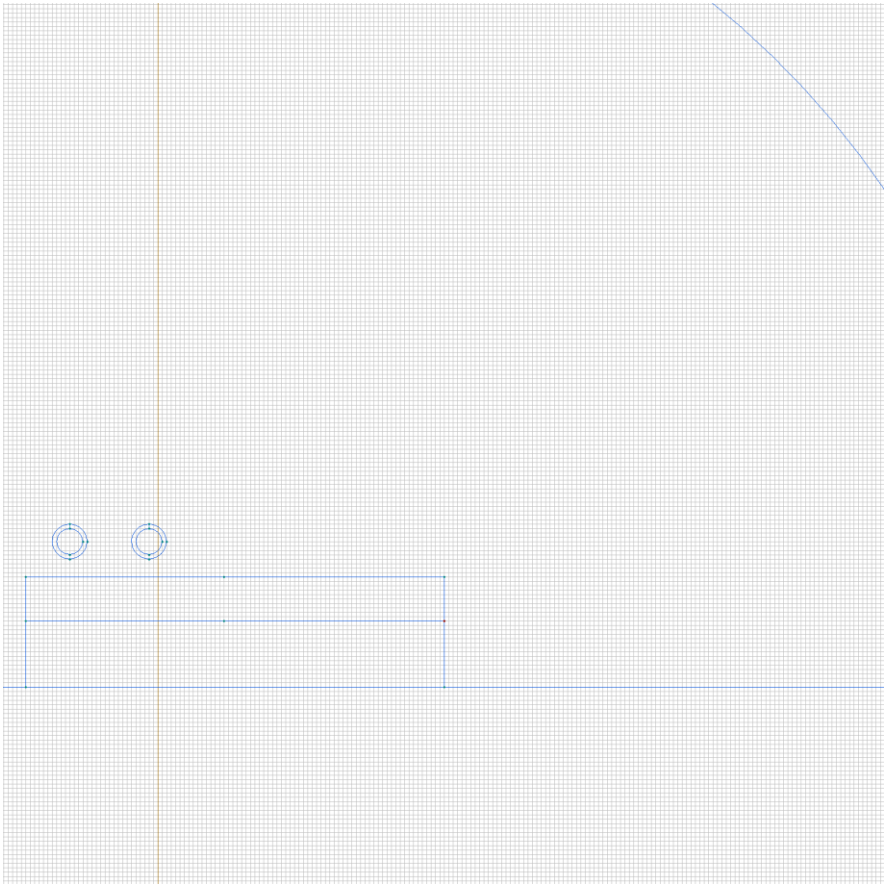
No material data (boundary conditions) are specified



Labelled objects: vertex "fixed"

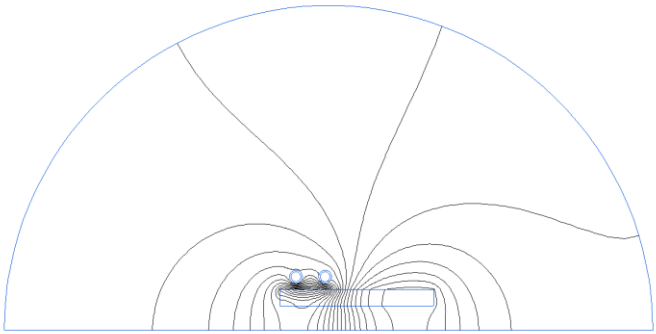
There are (1) objects with this label

No material data (boundary conditions) are specified



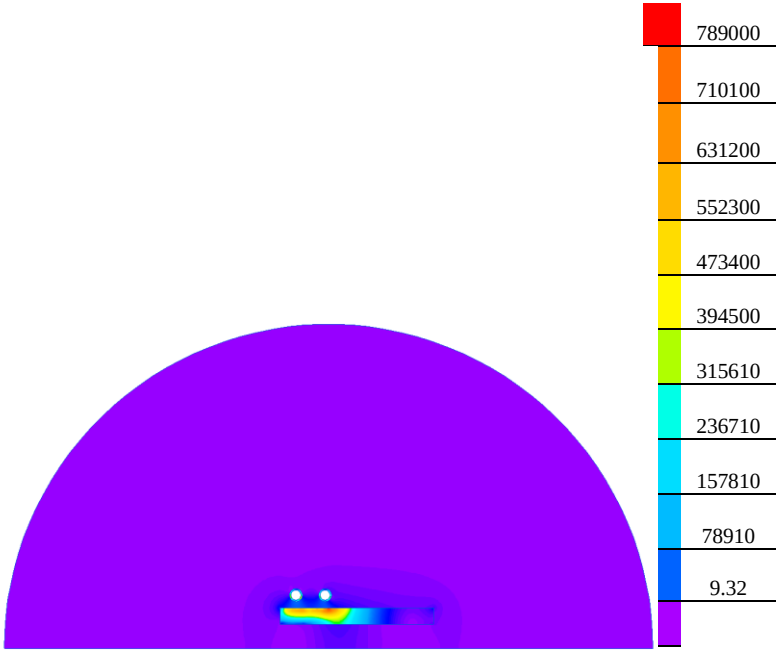
Results

Field lines



Results

Color map of Heat flux |F| [W/m2]



Nonlinear dependencies

No non-linear dependencies are used in this problem data