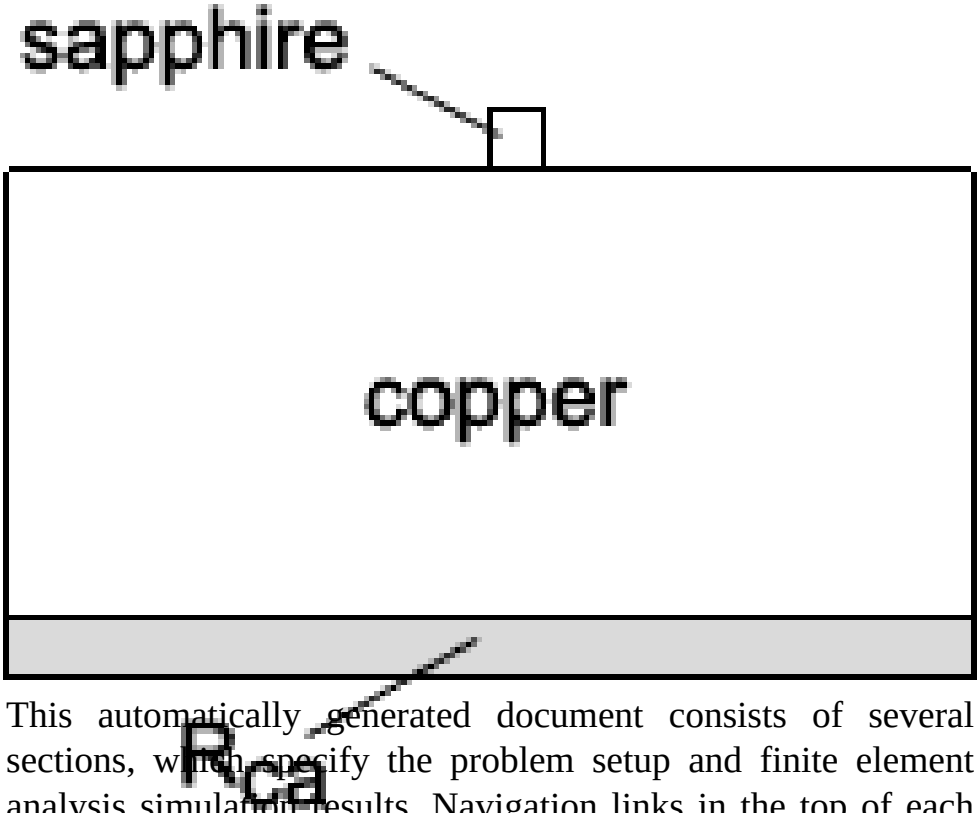
QuickField simulation report

Electronic device radiator

Calculation of the transient thermal resistance. This is an example problem analysis performed with QuickField software



This automatically generated document consists of several sections, which specify the problem setup and finite element analysis simulation results. Navigation links in the top of each page lead to corresponding sections of this report.

Problem description and QuickField simulation files:
https://quickfield.com/advanced/isaaccohen.htm

Problem info

Problem type: Transient Heat Transfer (integration time: 2 s.)
Geometry model class: Plane-Parallel
Problem database file names:

- Problem: *heat transient.pbm*
- Geometry: *Heat transient.mod*
- Material Data: *Heat transient.dht*
- Material Data 2 (library): *none*
- Electric circuit: *none*

Results taken from other problems:

- *none*

Geometry model

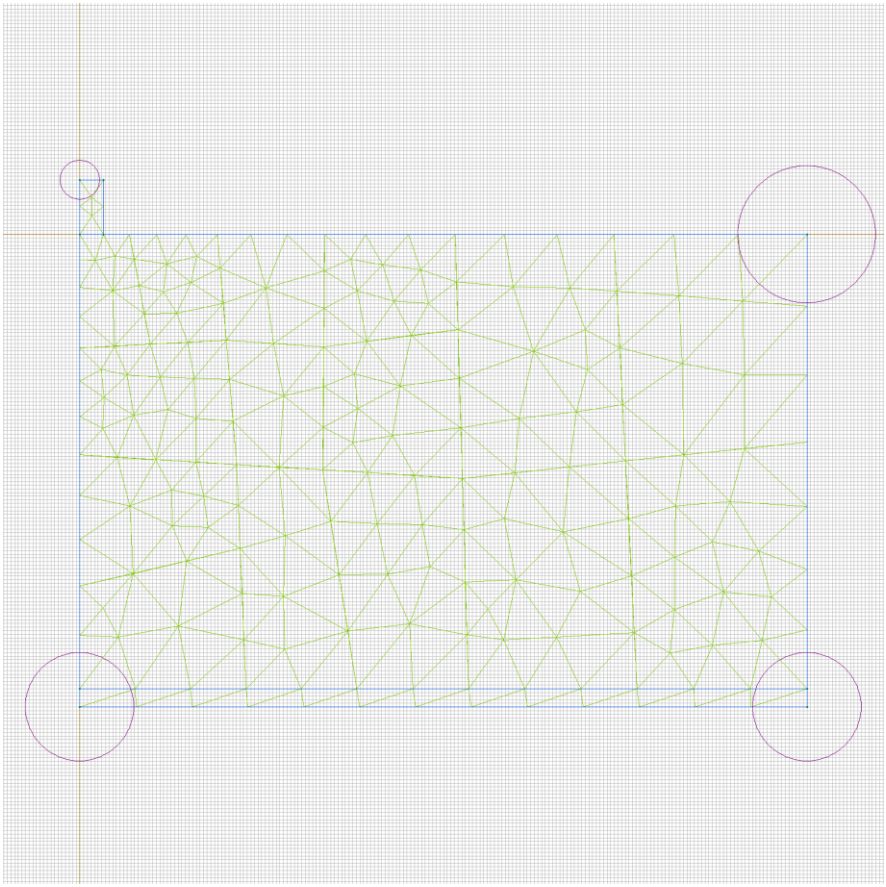


Table 1. Geometry model statistics

	With Label	Total
Blocks	3	3
Edges	4	11
Vertices	0	9

Number of nodes: 199.

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)

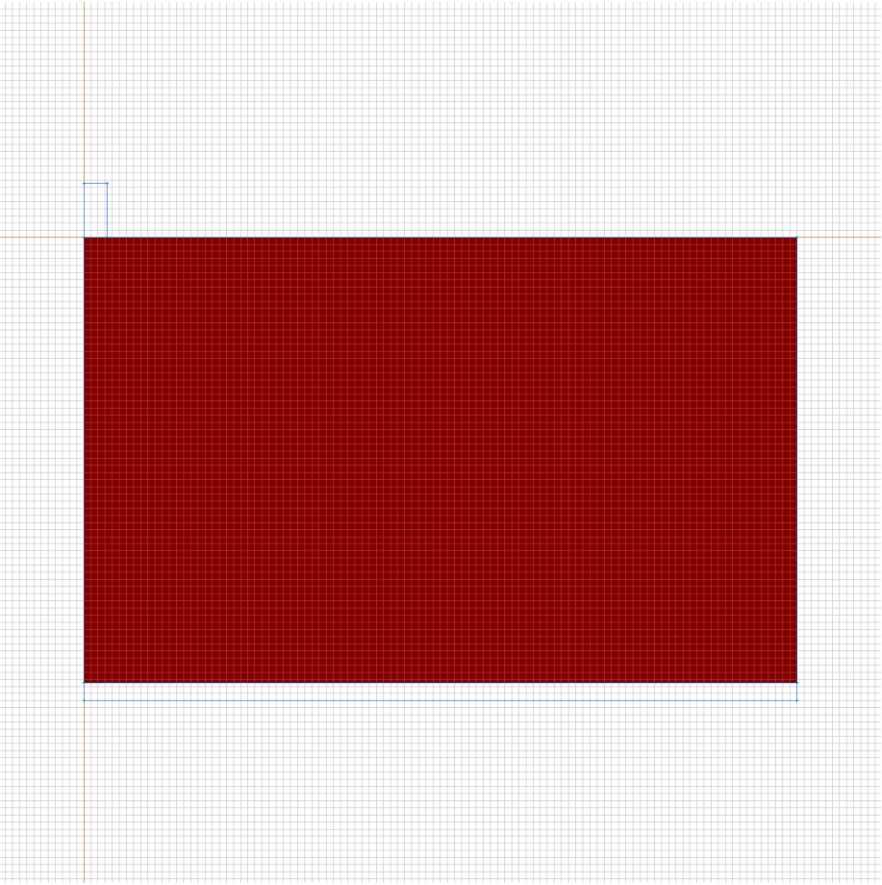
Blocks:	Edges:	Vertices:
• copper • Sapphire • Rca •	• side • symmetry • die bottom • Bottom •	

Detailed information about each label is listed below.

Labelled objects: block "copper"

There are (1) objects with this label

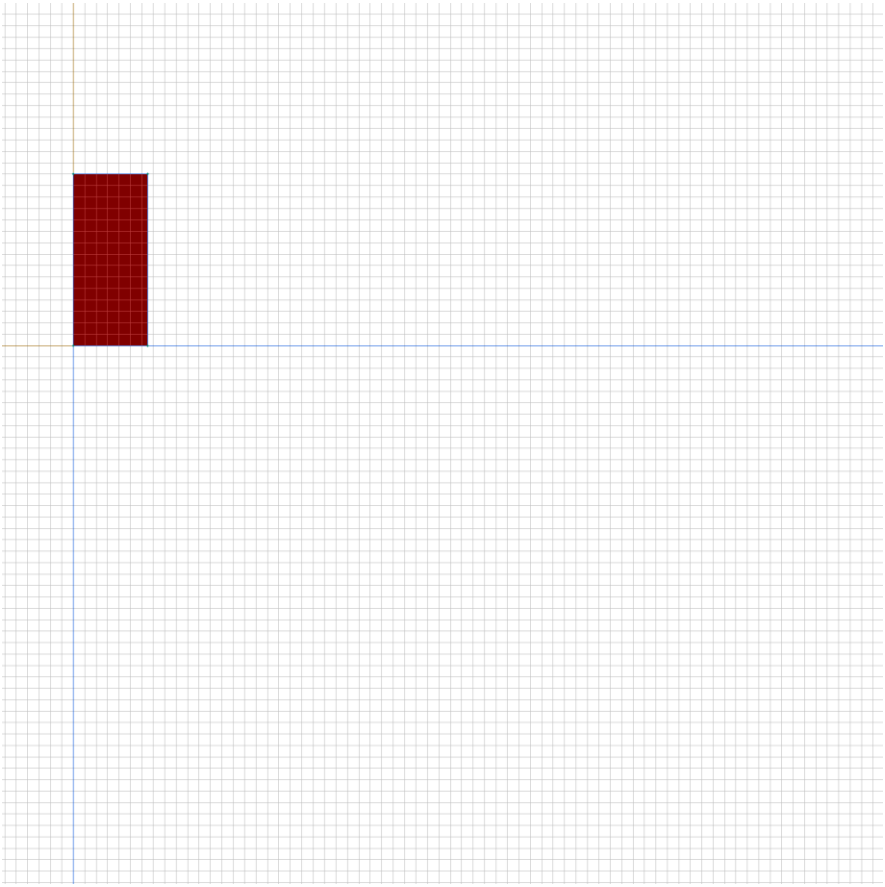
Thermal conductivity: lambda_x=394 [W/(K*m)], lambda_y=394 [W/(K*m)]
Specific heat: C=385 [J/(kg*K)]
Mass density: rho=8950 [kg/m3]



Labelled objects: block "Sapphire"

There are (1) objects with this label

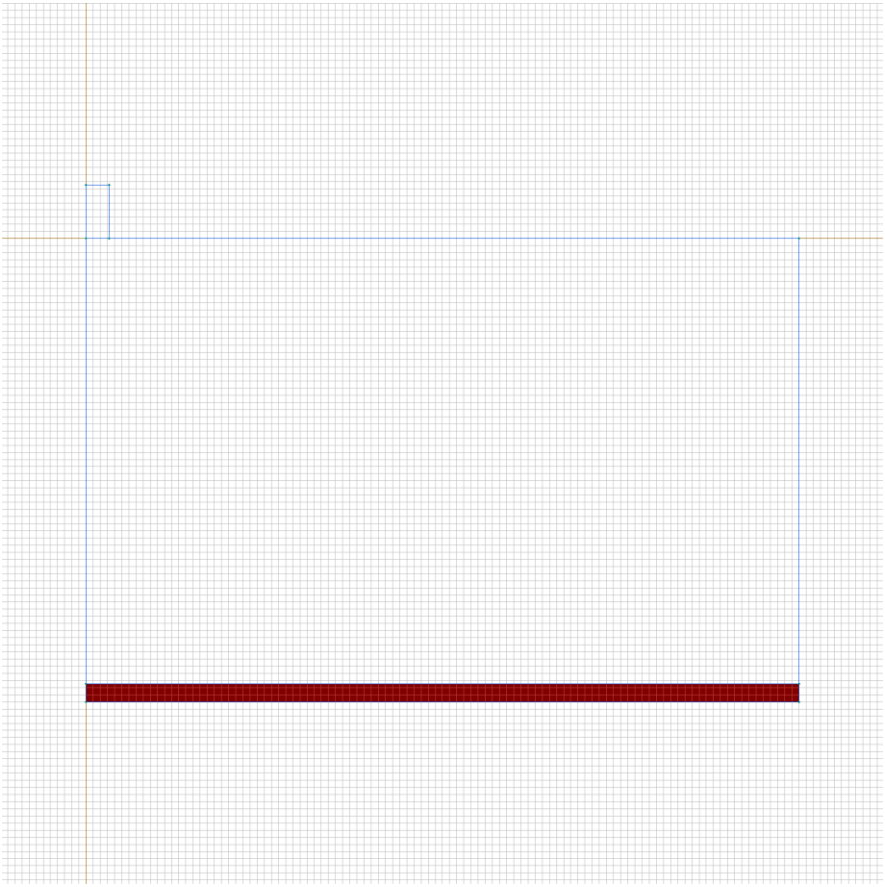
Thermal conductivity: lambda_x=28 [W/(K*m)], lambda_y=28 [W/(K*m)]
Specific heat: C=750 [J/(kg*K)]
Mass density: rho=3985 [kg/m3]



Labelled objects: block "Rca"

There are (1) objects with this label

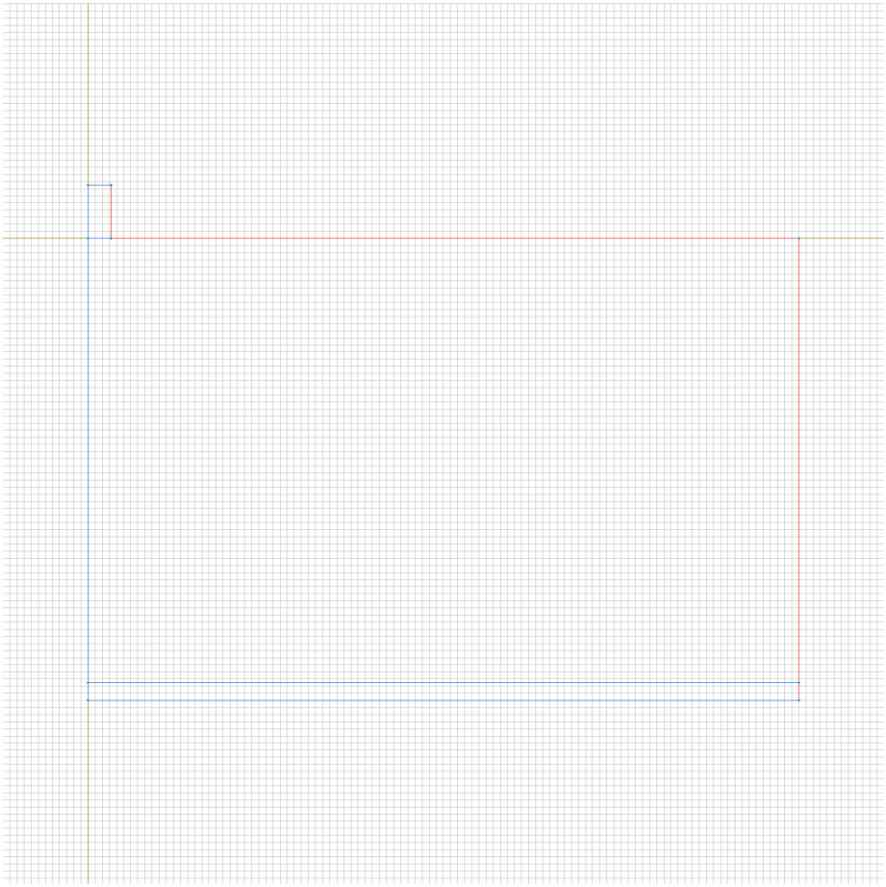
Thermal conductivity: lambda_x=1 [W/(K*m)], lambda_y=1 [W/(K*m)]



Labelled objects: edge "side"

There are (4) objects with this label

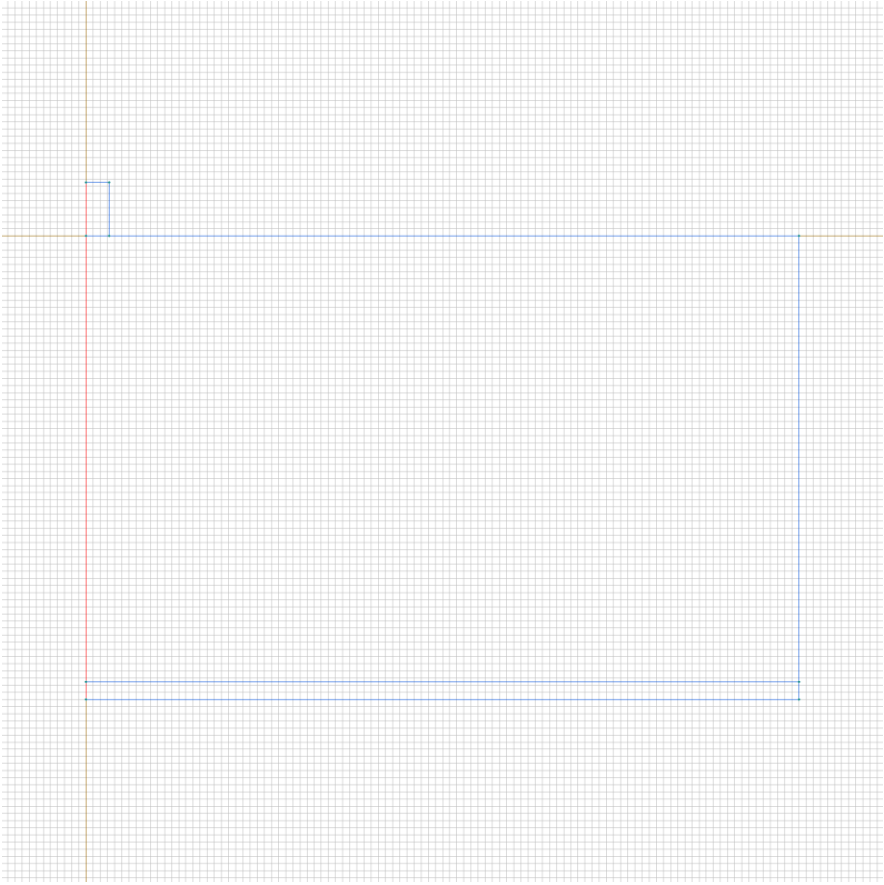
Heat flux: F=0 [W/m2]



Labelled objects: edge "symmetry"

There are (3) objects with this label

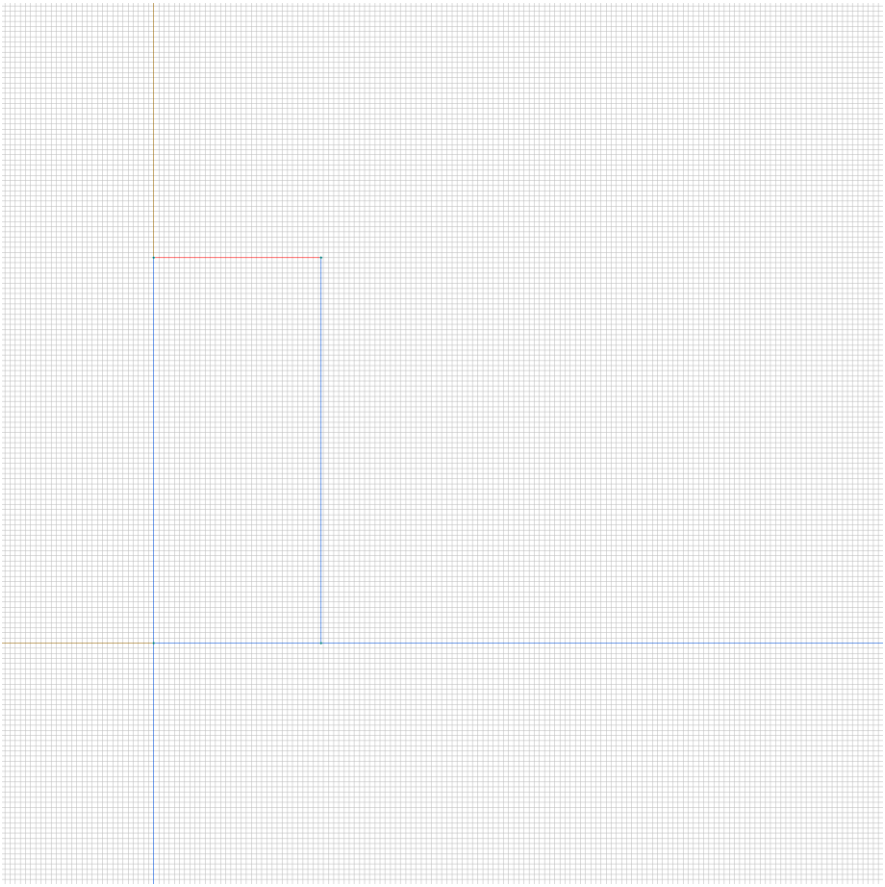
Heat flux: F=0 [W/m2]



Labelled objects: edge "die bottom"

There are (1) objects with this label

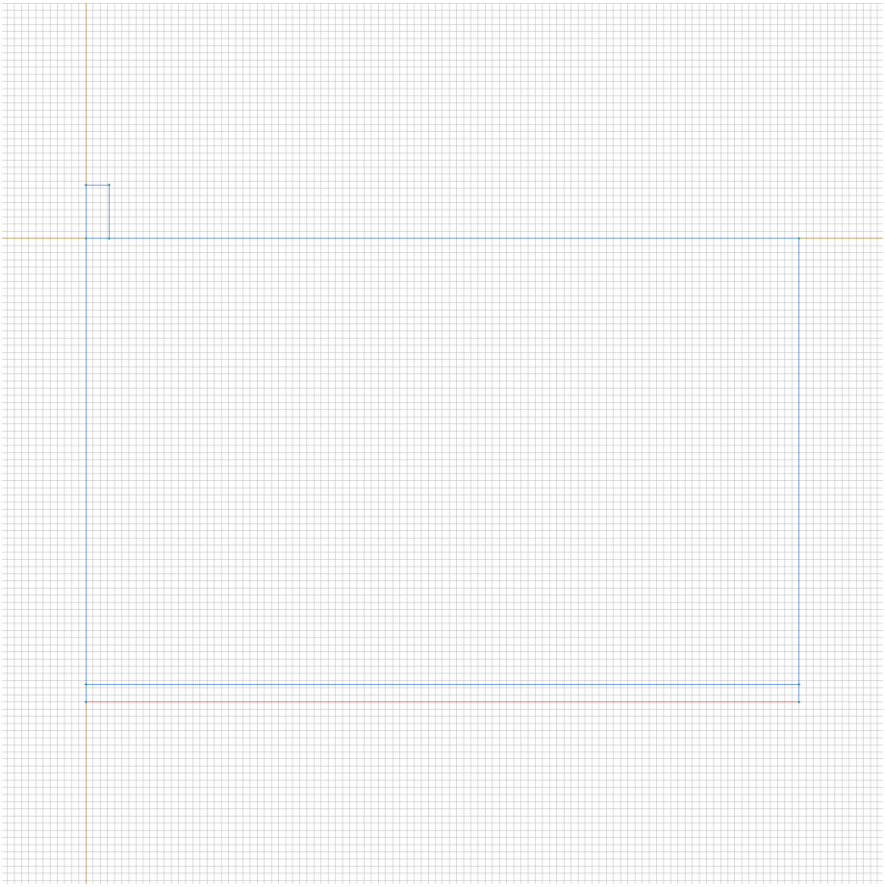
Heat flux: F=60000000 [W/m2]



Labelled objects: edge "Bottom"

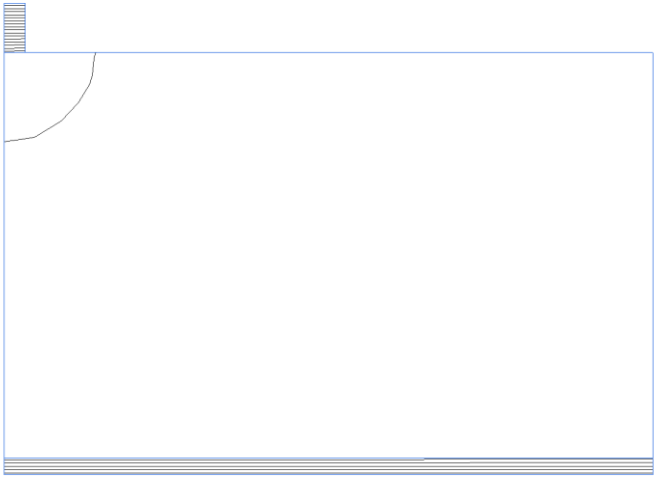
There are (1) objects with this label

Temperature: T=-273.15 [K]



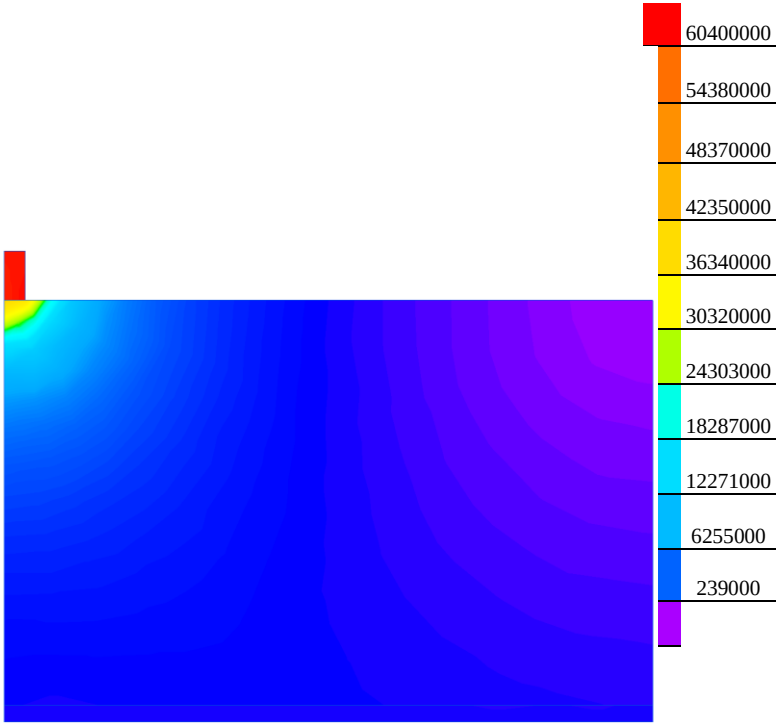
Results

Field lines



Results

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



Nonlinear dependencies

No non-linear dependencies are used in this problem data