

Problem info

Problem type: DC Conduction

Geometry model class: Plane-Parallel

Problem database file names:

- Problem: *DCCond1.pbm*
- Geometry: *Dccond1.mod*
- Material Data: *Dccond1.dcf*
- Material Data 2 (library): *none*
- Electric circuit: *none*

Results taken from other problems:

- *none*

Geometry model

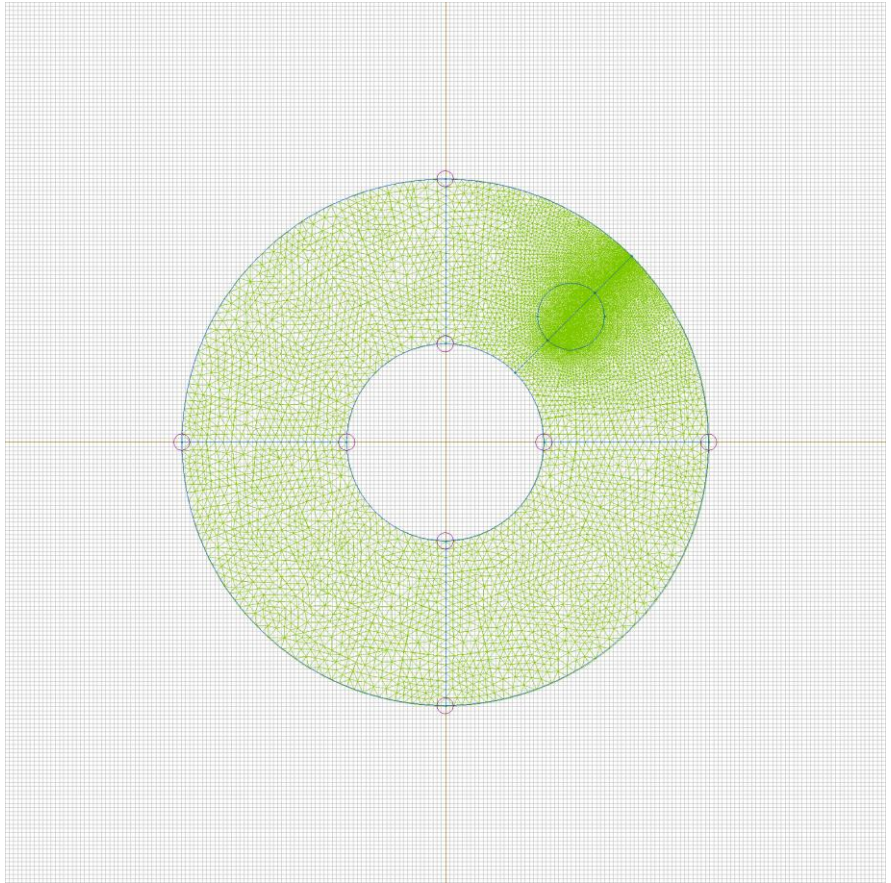


Table 1. Geometry model statistics

	With Label	Total
Blocks	2	8
Edges	2	21
Vertices	0	14

Number of nodes: 10951.

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:

- [insulation](#)
- [defect](#)
-

Edges:

- [conductor](#)
- [shield](#)
-

Vertices:

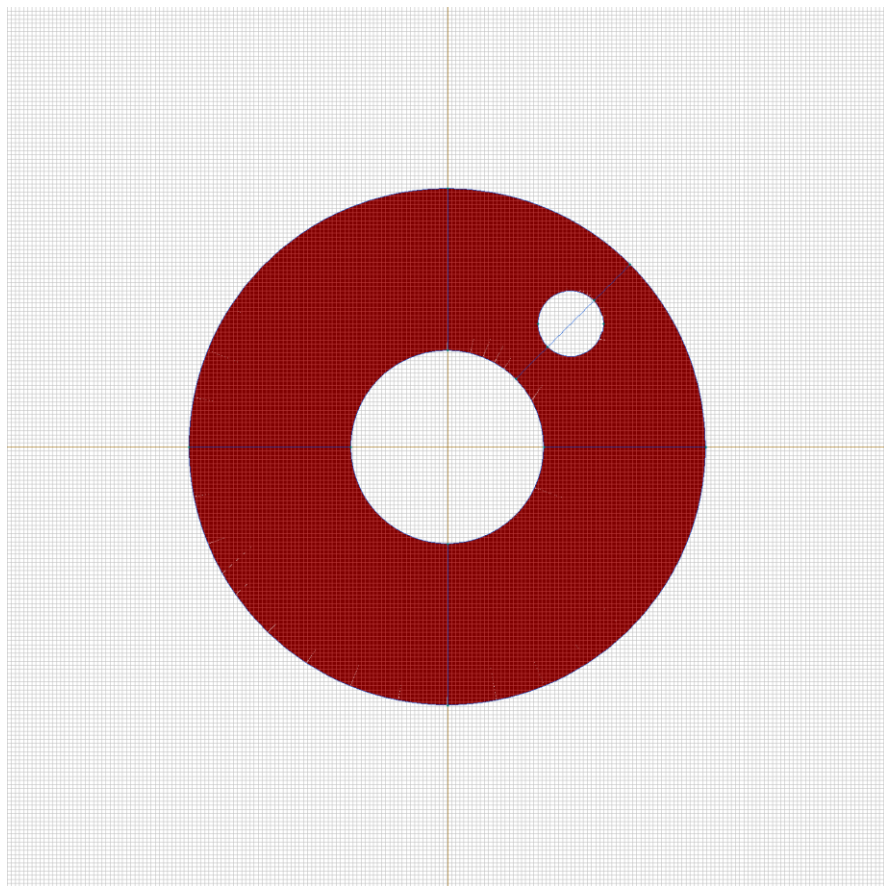
Detailed information about each label is listed below.

Labelled objects: block "insulation"

There are (5) objects with this label

Electrical conductivity: $\sigma = \text{nonlinear}$ (see Table 2 in the "Nonlinear dependencies" section)

Reference temperature: $T = 273 + 80, K$

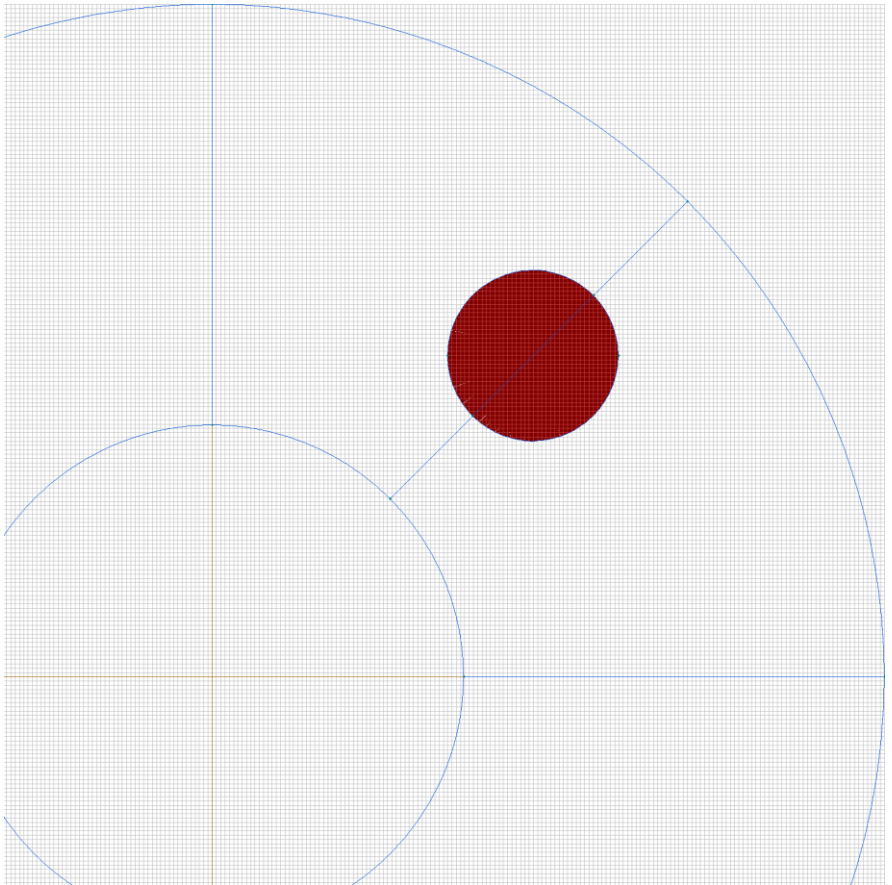


Labelled objects: block "defect"

There are (2) objects with this label

Electrical conductivity: $\sigma = \text{nonlinear}$ (see Table 3 in the "Nonlinear dependencies" section)

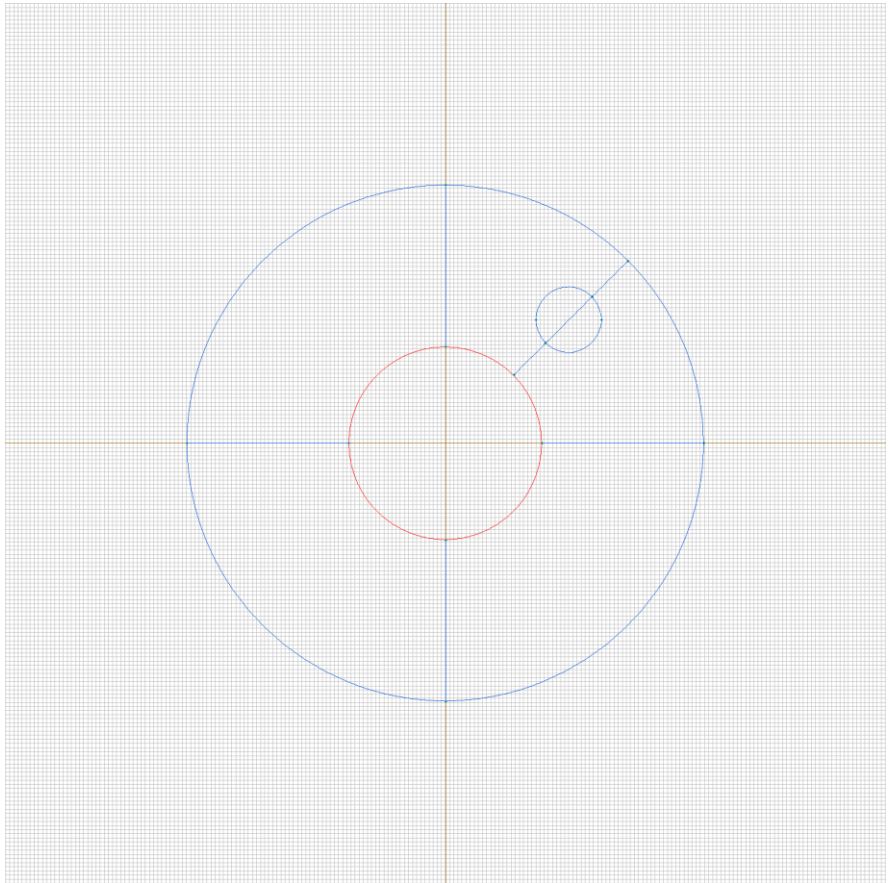
Reference temperature: $T = 393 - 40 * \sin(\sqrt{((100 * x - 1.5)^2 + (100 * y - 1.5)^2)} * 180 / \pi * 4), K$



Labelled objects: edge "conductor"

There are (5) objects with this label

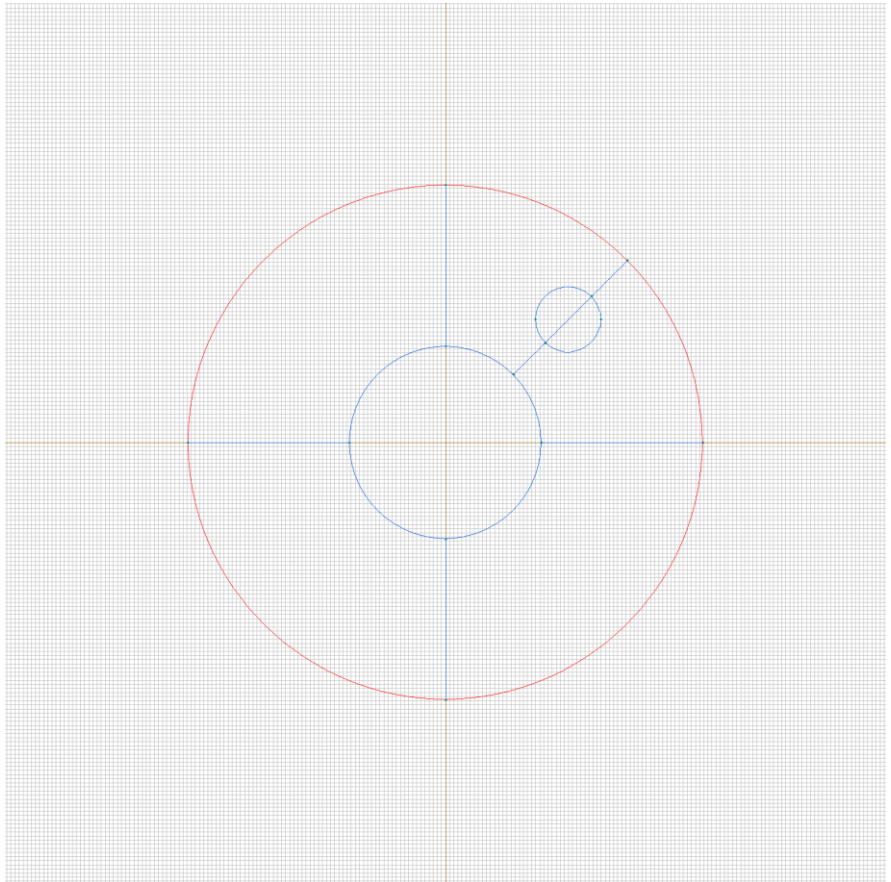
Voltage: $U=10000\text{ V}$



Labelled objects: edge "shield"

There are (5) objects with this label

Voltage: $U=0$ V



[Problem info](#)

[Geometry model](#)

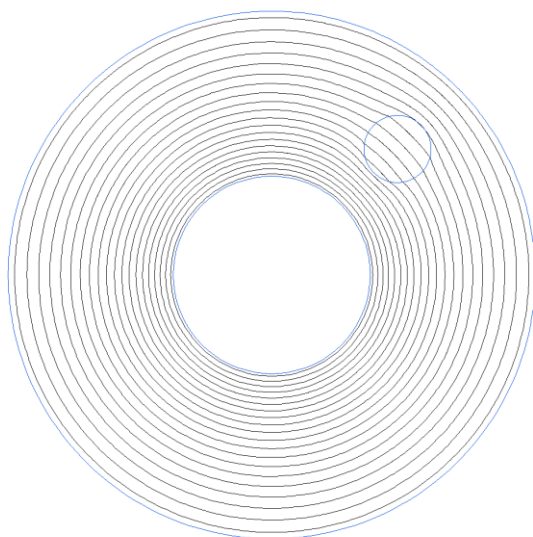
[Labelled Objects](#)

[Results](#)

[Nonlinear dependencies](#)

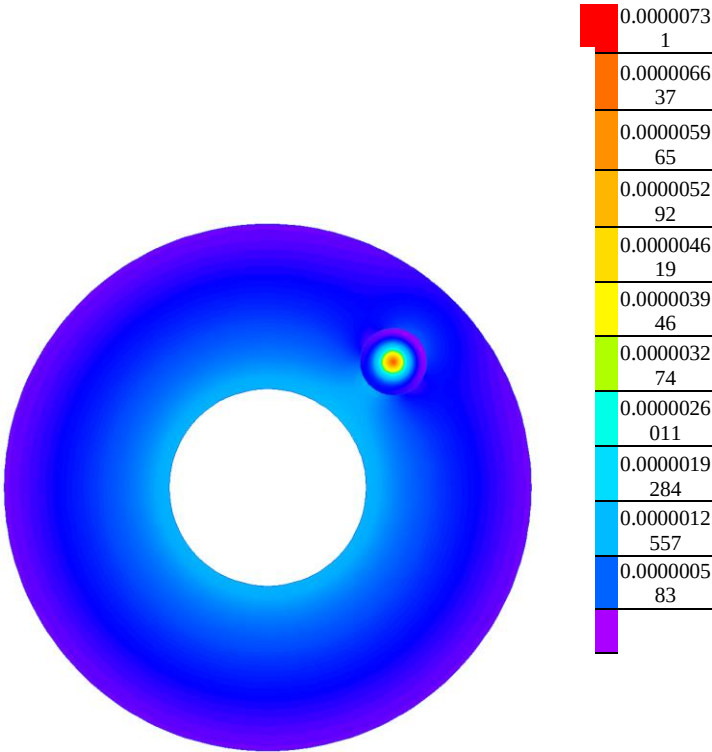
Results

Field lines



Results

Color map of Current density $|j|$ [A/m²]



Nonlinear dependencies

Table 2. Electric conductivity

T [K]	sigma [S/m]
273	0.000000000000008
293	0.000000000000001
333	0.000000000000008
353	0.000000000000002
373	0.000000000000001

Table 3. Electric conductivity

T [K]	sigma [S/m]
273	0.000000000000008
293	0.000000000000001
333	0.000000000000008
353	0.000000000000002
373	0.000000000000001