

Problem info

Problem type: Transient Magnetics (integration time: 0.5 s.)

Geometry model class: Plane-Parallel

Problem database file names:

- Problem: *te_circuit2.pbm*
- Geometry: *Te_circuit2.mod*
- Material Data: *Te_circuit2.dms*
- Material Data 2 (library): *none*
- Electric circuit: *Te_circuit2.qcr*

Results taken from other problems:

- *none*

Geometry model

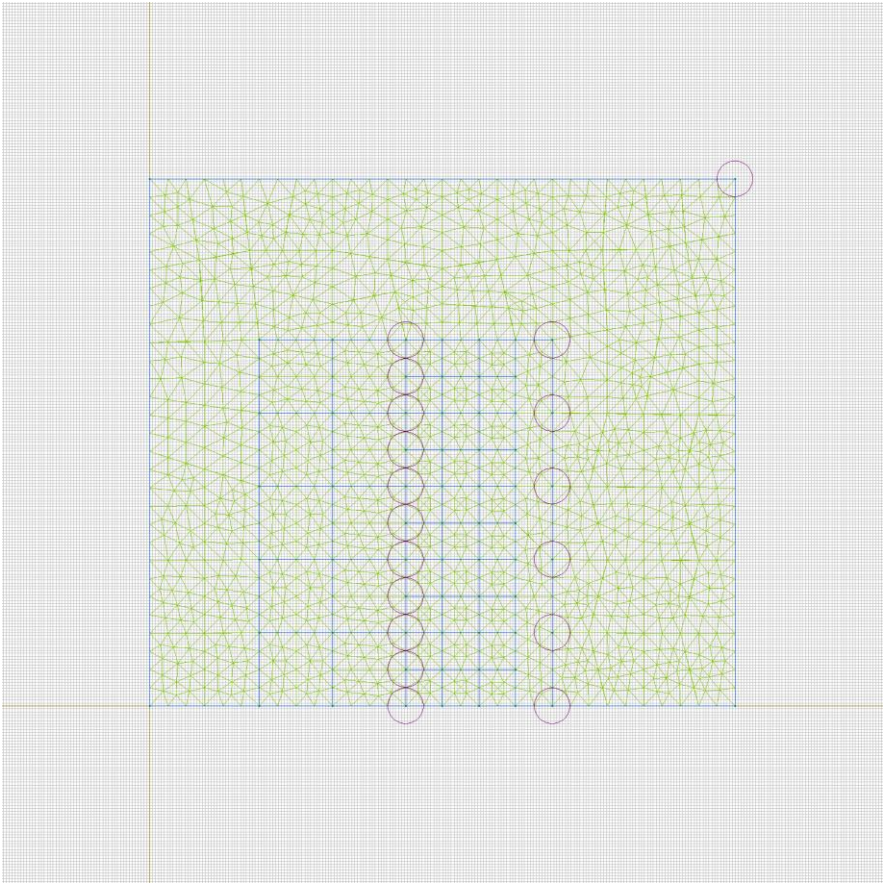


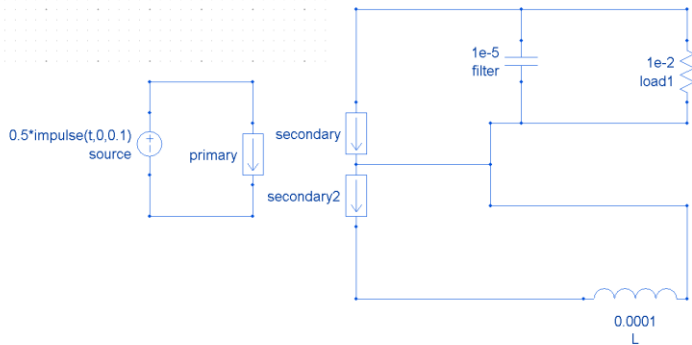
Table 1. Geometry model statistics

	With Label	Total
Blocks	5	42
Edges	3	107
Vertices	0	66

Number of nodes: 1391.

Electric circuit

Coupled electric circuit



Circuit elements:

QuickField block 'primary'

QuickField block 'secondary'

QuickField block 'secondary2'

Voltage source $\text{source} = 0.5 \cdot \text{impulse}(t, 0, 0.1)$ [V]

Capacitor filter = 0.00001 [F]

Inductor L = 0.0001 [H]

Resistor load1=0.01 [Ohm]

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:

- [steel core](#)
- [primary](#)
- [secondary2](#)
- [secondary](#)
- [air](#)
-

Edges:

- [a0](#)
- [symmetry_v](#)
- [symmetry_h](#)
-

Vertices:

Detailed information about each label is listed below.

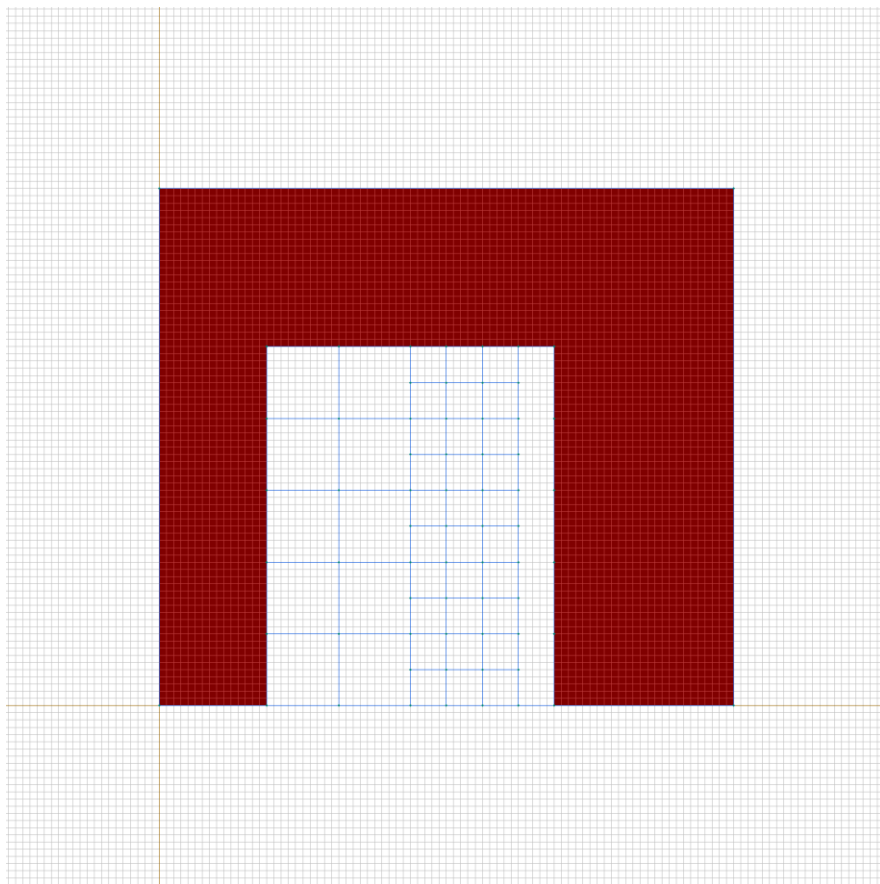
Labelled objects: block "steel core"

There are (1) objects with this label

Relative magnetic permeability: $\mu_x=500$, $\mu_y=500$

Current density: $j=0$ [A/m²]

Conductor's connection: in parallel



Labelled objects: block "primary"

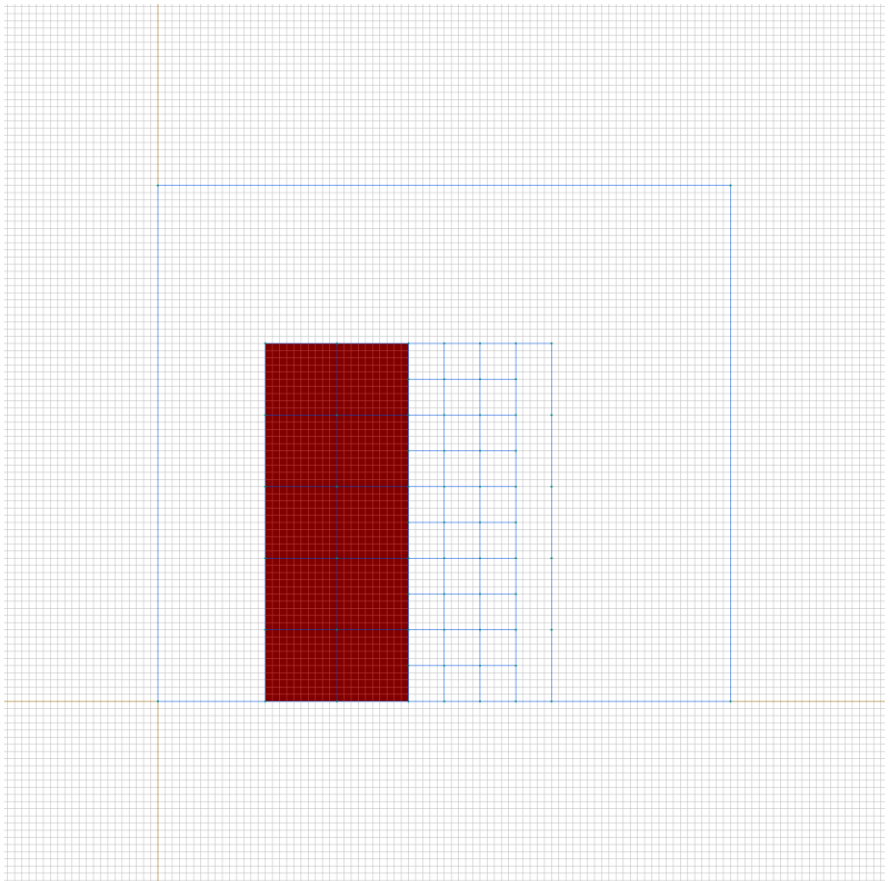
There are (10) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma(T)=56000000$ [S/m]

Voltage: $U=0$ [V]

Conductor's connection: in parallel



Labelled objects: block "secondary2"

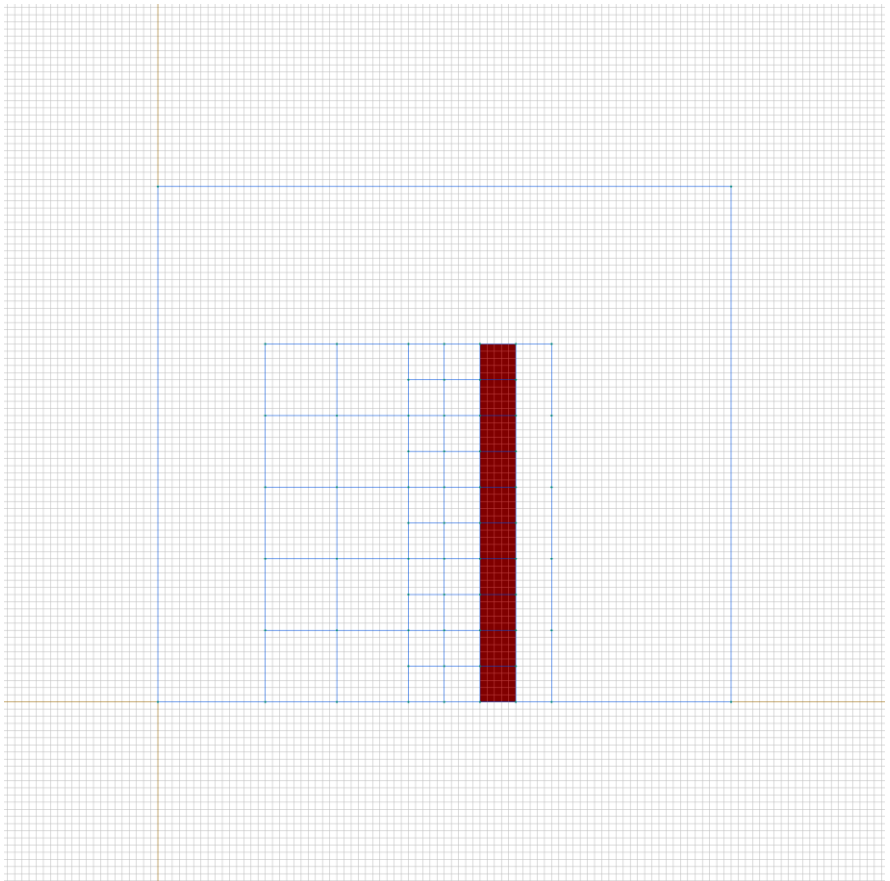
There are (10) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma(T)=56000000$ [S/m]

Voltage: $U=0$ [V]

Conductor's connection: in parallel



Labelled objects: block "secondary"

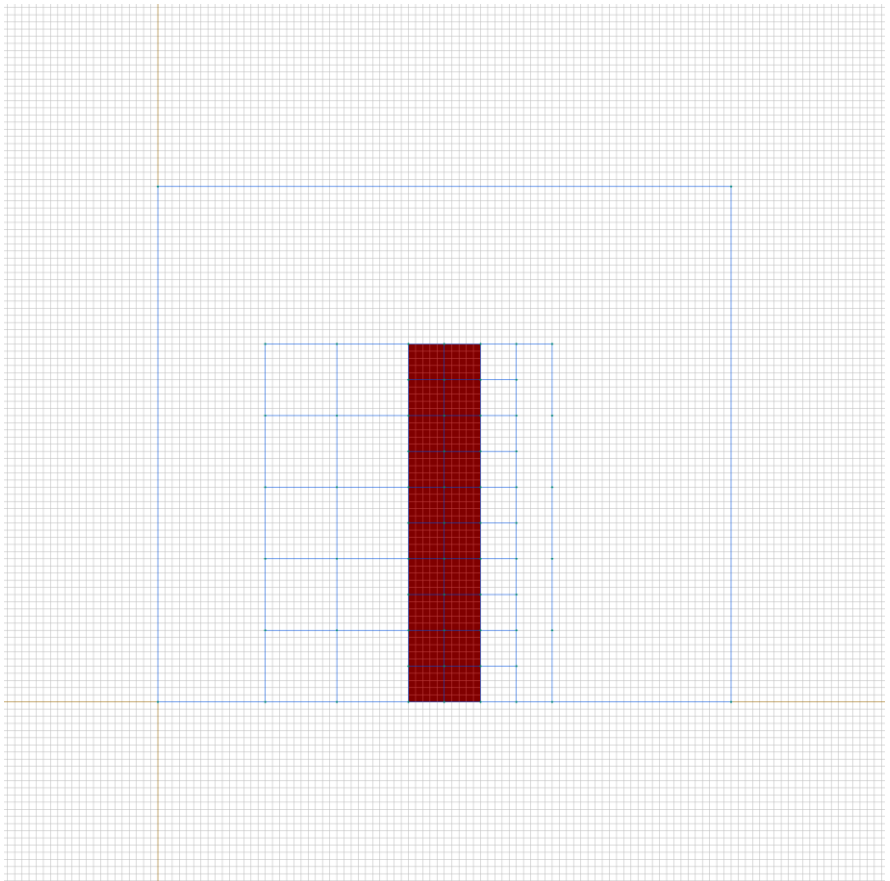
There are (20) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma(T)=56000000$ [S/m]

Voltage: $U=0$ [V]

Conductor's connection: in parallel



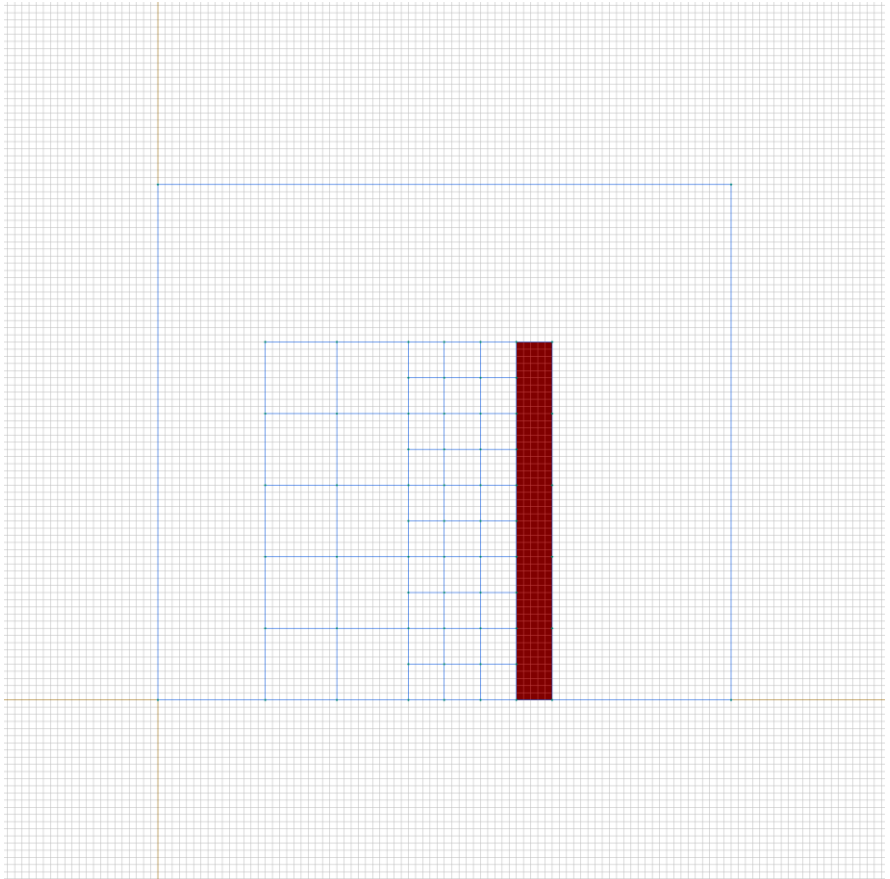
Labelled objects: block "air"

There are (1) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Current density: $j=0$ [A/m²]

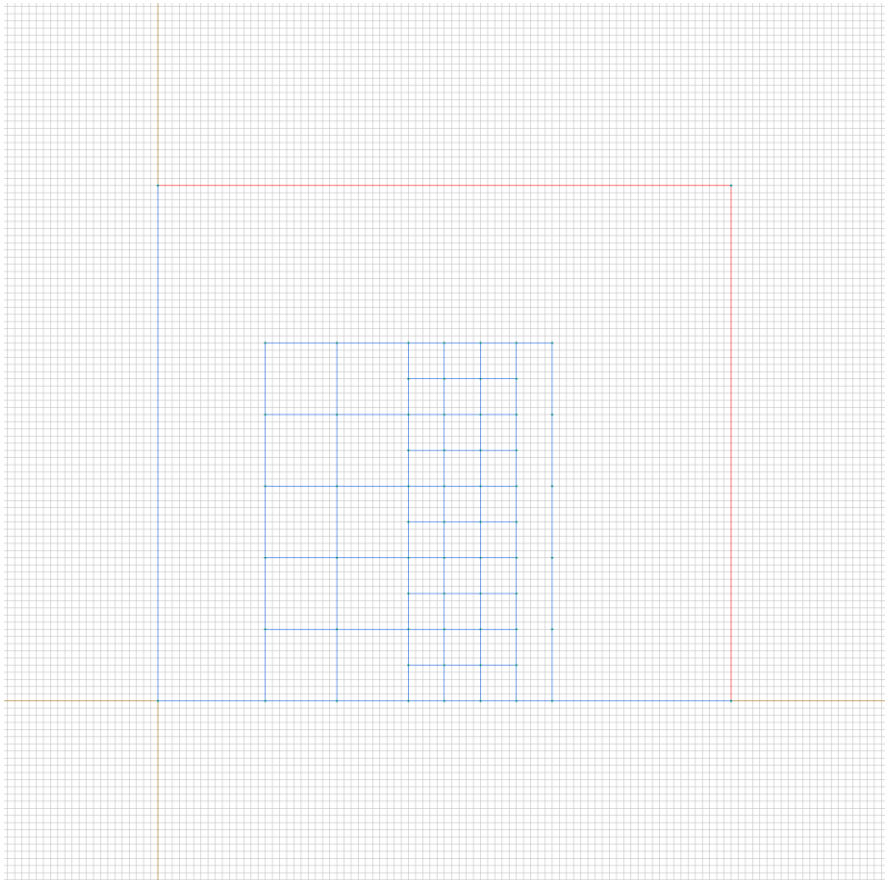
Conductor's connection: in parallel



Labelled objects: edge "a0"

There are (2) objects with this label

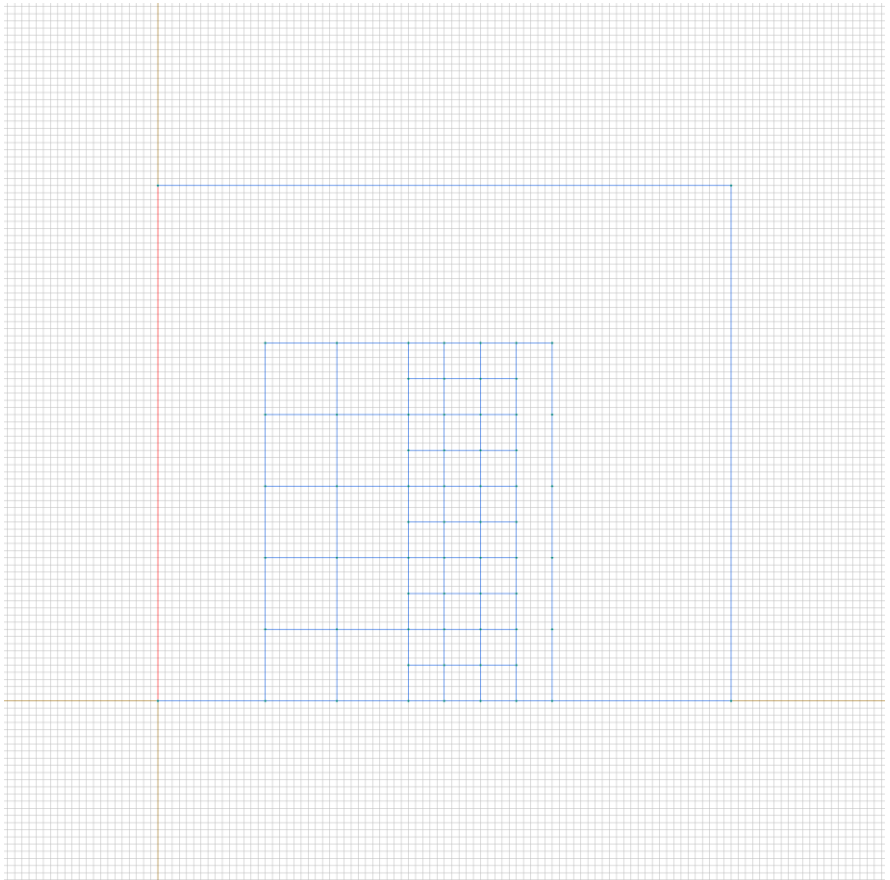
Magnetic potential: $A=0$ [Wb/m]



Labelled objects: edge "symmetry_v"

There are (1) objects with this label

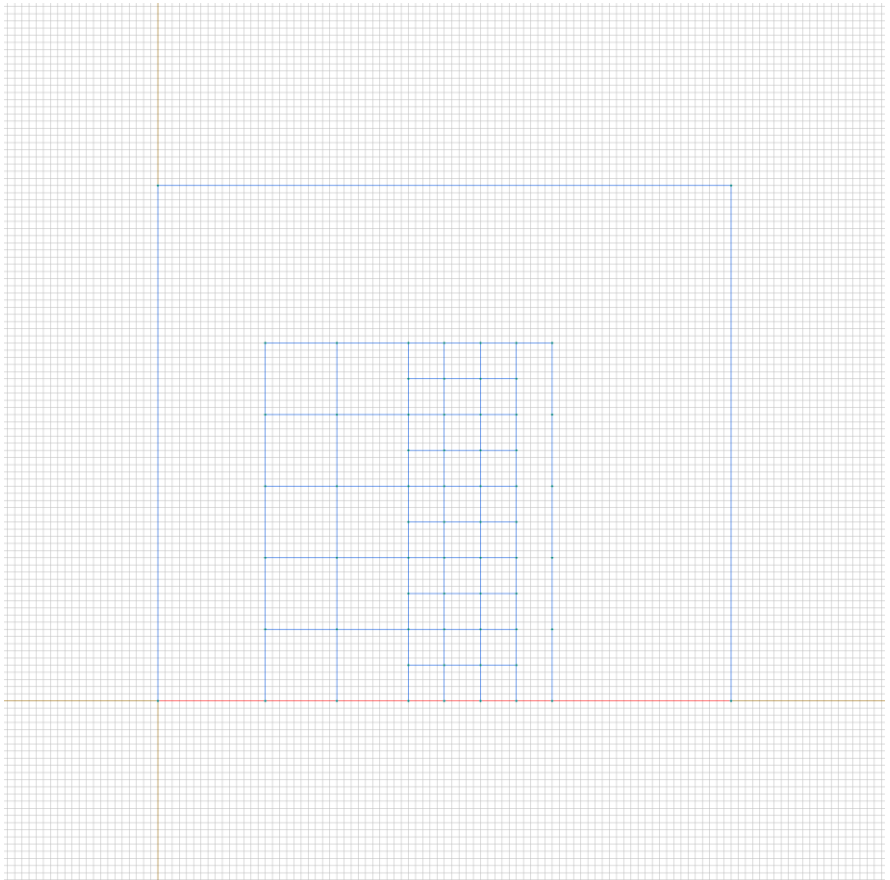
Magnetic potential: $A=0$ [Wb/m]



Labelled objects: edge "symmetry_h"

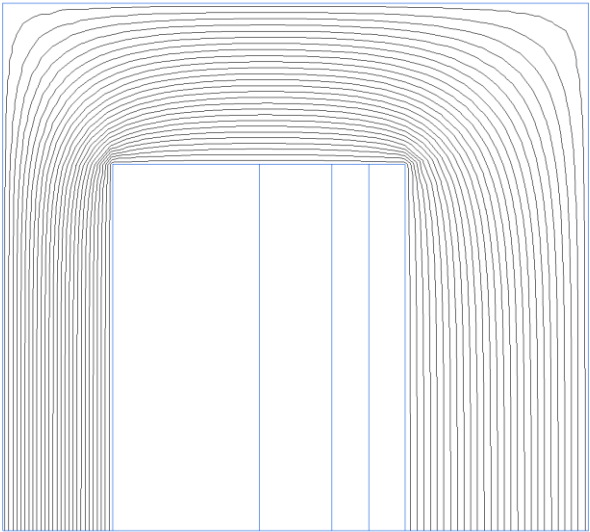
There are (8) objects with this label

Tangential field: $H_{t=0}$ [A/m]



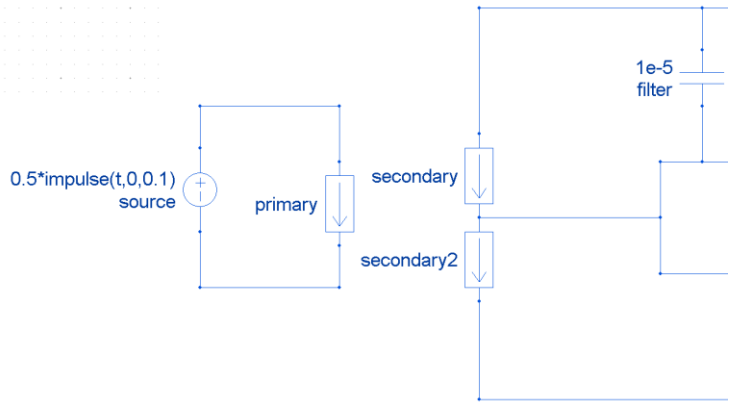
Results

Field lines



Results

Electric circuit currents



Circuit elements:

primary. $I=387.1$ [A]

secondary. $I=2.713$ [A]

secondary2. $I=28.222$ [A]

source. $I=387.1$ [A]

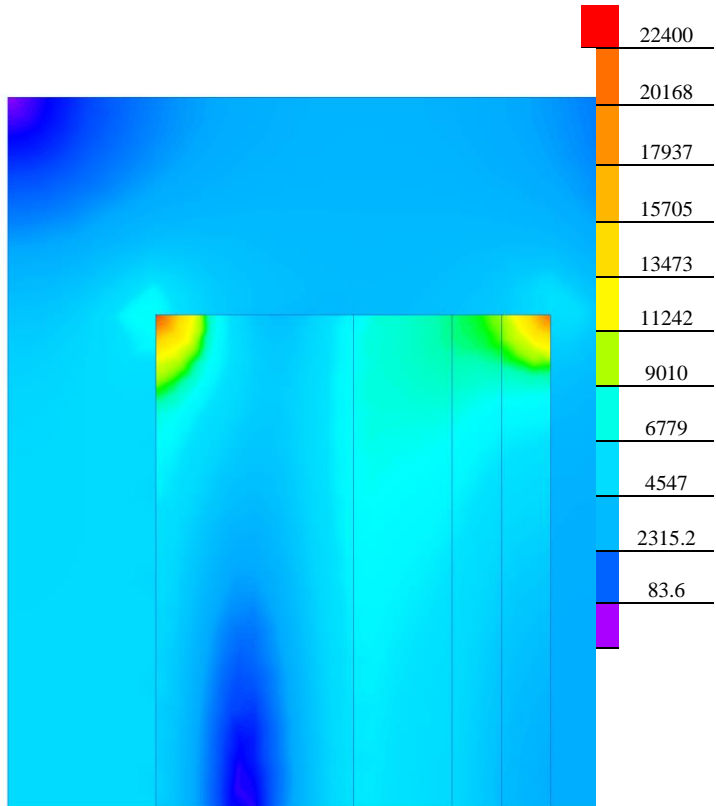
filter. I=0.0000004989 [A]

L. I=28.222 [A]

load1. I=2.713 [A]

Results

Color map of Strength $|H|$ [A/m]



Nonlinear dependencies

No non-linear dependencies are used in this problem data