Problem info

Problem type: Transient Magnetics (integration time: 0.200000002980232 s.)
Geometry model class: Axisymmetric
Problem database file names:

- Problem: *te_circuit1.pbm*
- Geometry: *Te_circuit1.mod*
- Material Data: *Te_circuit1.dms*
- Material Data 2 (library): *none*
- Electric circuit: *Te_circuit1.qcr*

Results taken from other problems:

- *none*

Geometry model

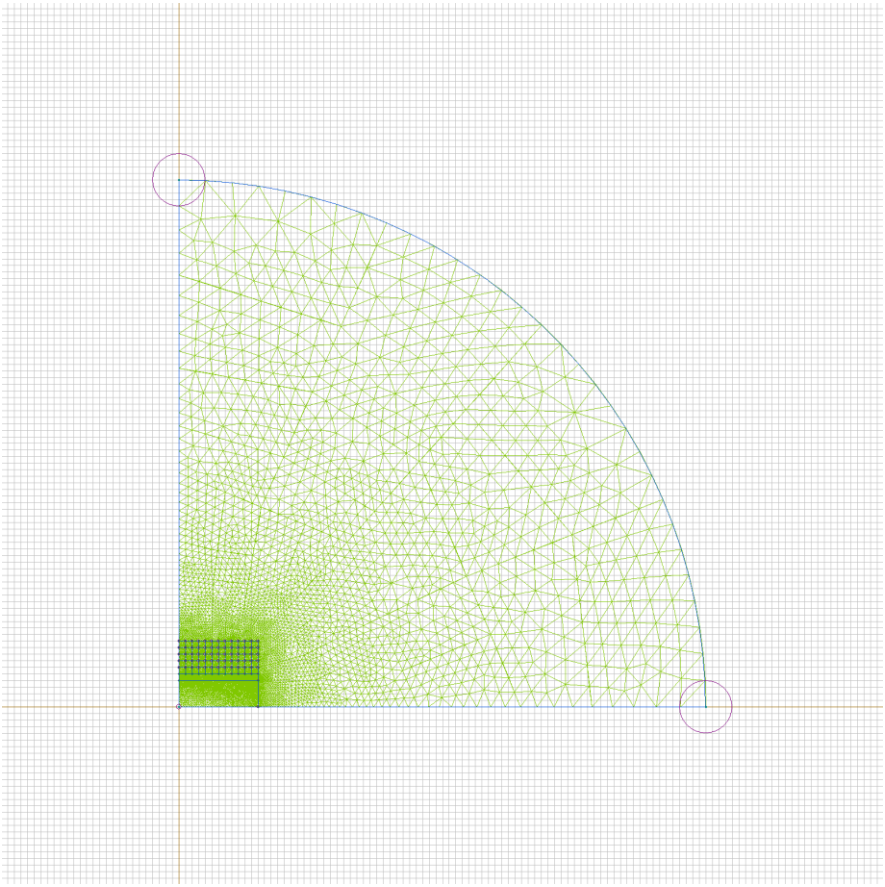


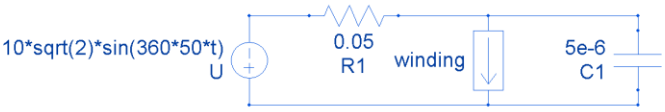
Table 1. Geometry model statistics

	With Label	Total
Blocks	3	63
Edges	3	146
Vertices	0	84

Number of nodes: 9127.

Electric circuit

Coupled electric circuit



Circuit elements:

Voltage source U=10*sqrt(2)*sin(360*50*t) [V]
QuickField block 'winding'
Resistor R1=0.05 [Ohm]
Capacitor C1=0.000005 [F]

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)

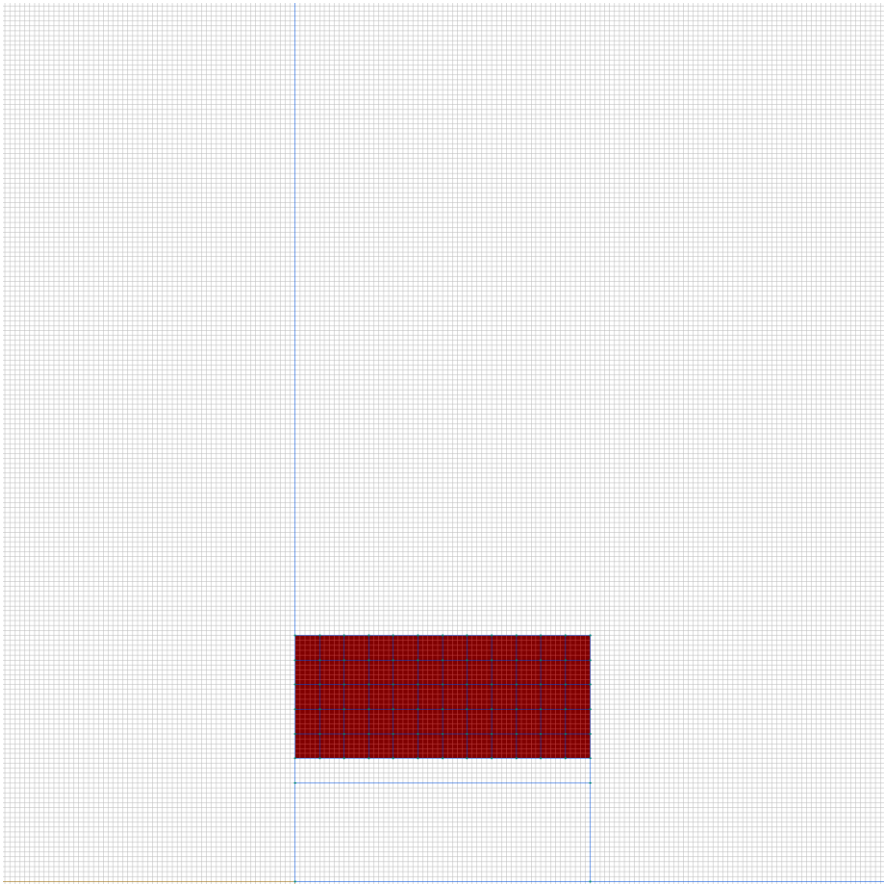
Blocks:	Edges:	Vertices:
• winding • steel core • air •	• symmetry • far away • axis of rotation •	

Detailed information about each label is listed below.

Labelled objects: block "winding"

There are (60) objects with this label

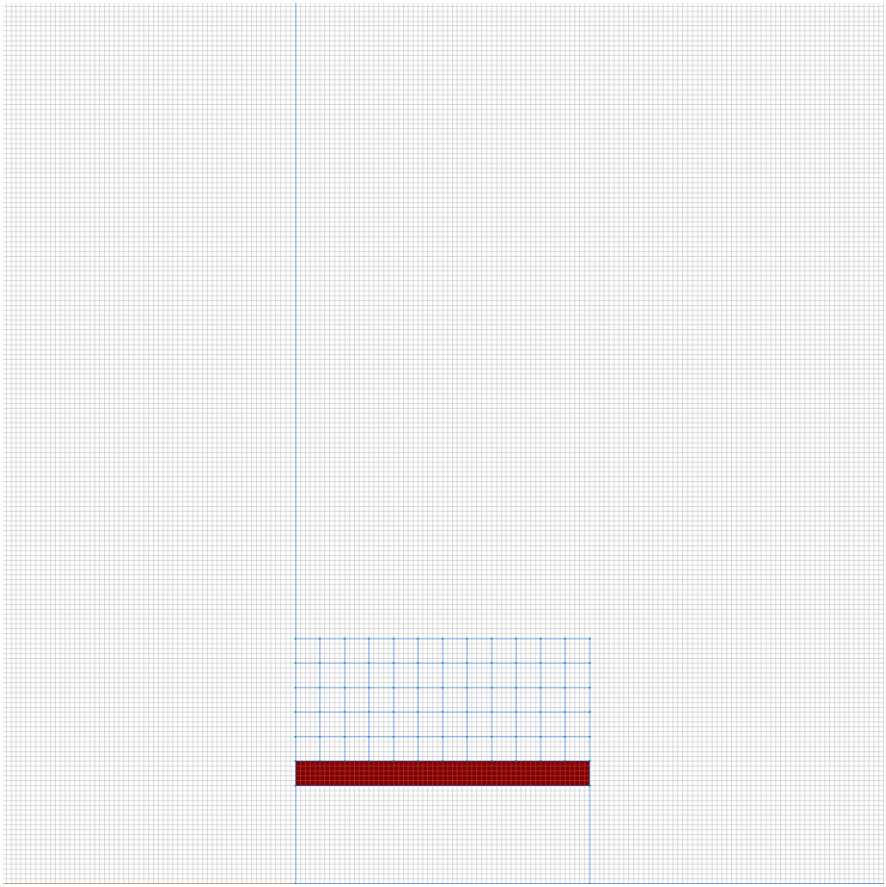
Relative magnetic permeability: mu_x=1, mu_y=1
Electric conductivity: sigma(T)=56000000 [S/m]
Voltage: U=0.001 [V]
Conductor's connection: in series



Labelled objects: block "steel core"

There are (1) objects with this label

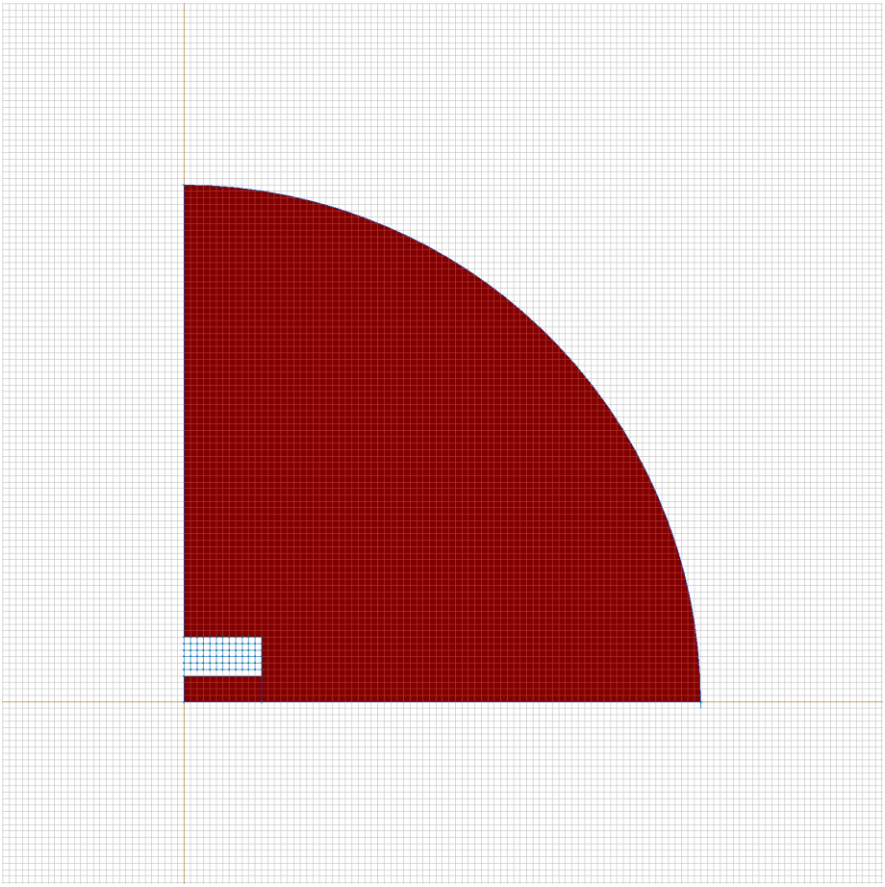
Relative magnetic permeability: mu=nonlinear (see Table 2 in the "Nonlinear dependencies" section)
Current density: j=0 [A/m2]
Conductor's connection: in parallel



Labelled objects: block "air"

There are (2) objects with this label

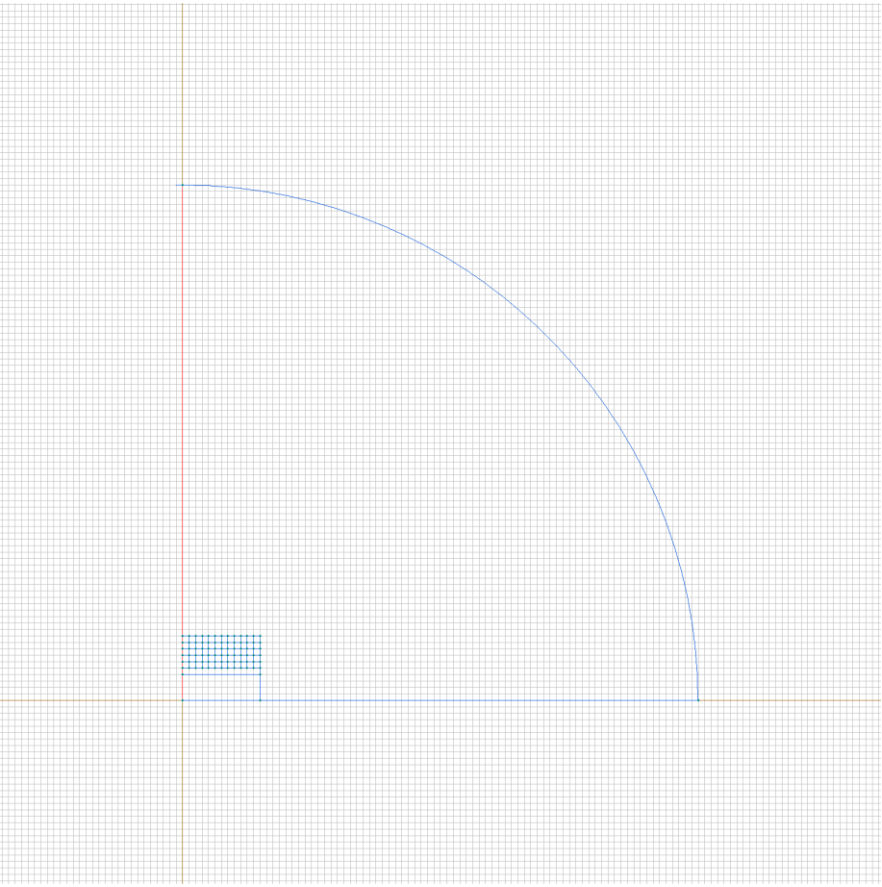
Relative magnetic permeability: mu_x=1, mu_y=1
Current density: j=0 [A/m2]
Conductor's connection: in parallel



Labelled objects: edge "symmetry"

There are (8) objects with this label

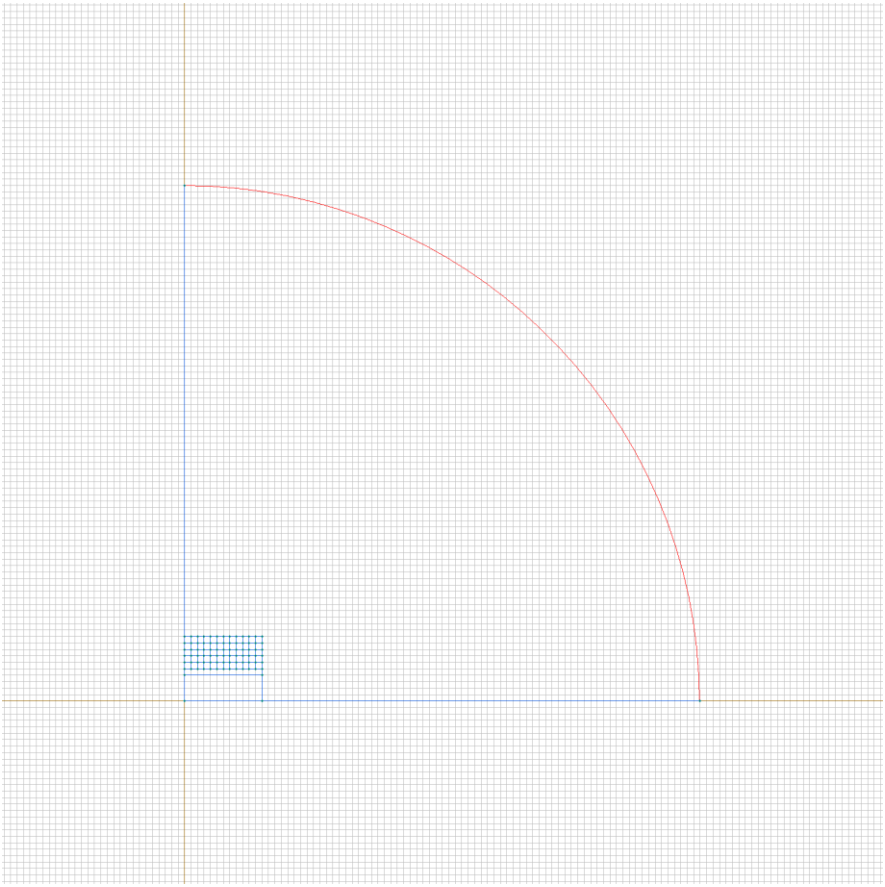
Tangential field: H_t=0 [A/m]



Labelled objects: edge "far away"

There are (1) objects with this label

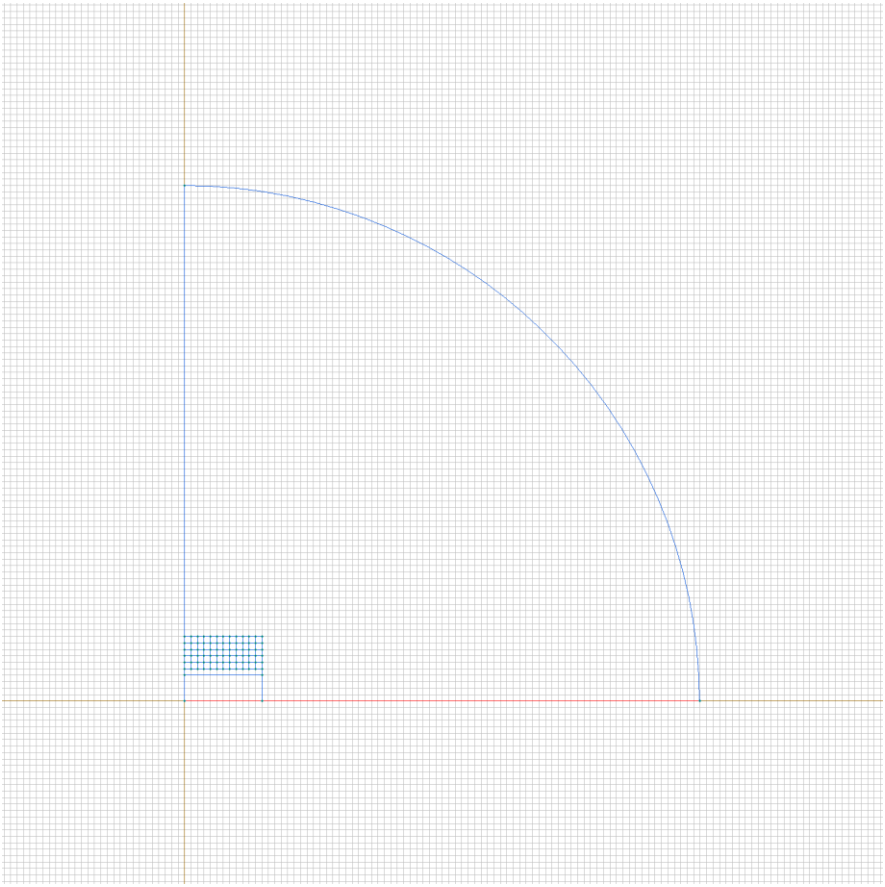
Magnetic potential: A=0 [Wb/m]



Labelled objects: edge "axis of rotation"

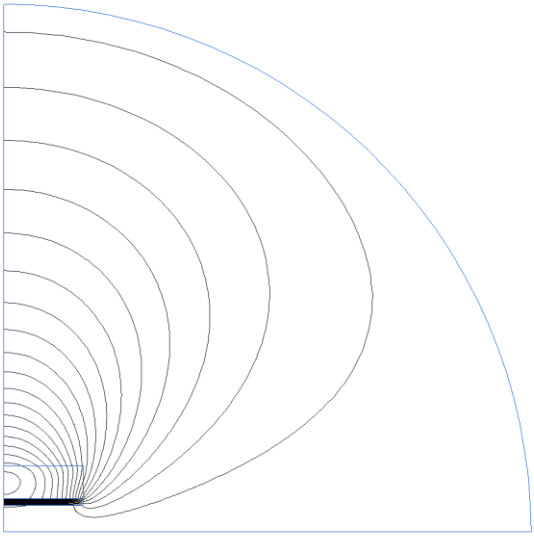
There are (2) objects with this label

Magnetic potential: A=0 [Wb/m]



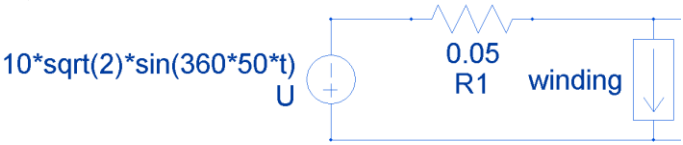
Results

Field lines



Results

Electric circuit currents



Circuit elements:

U. I=52.17 [A]

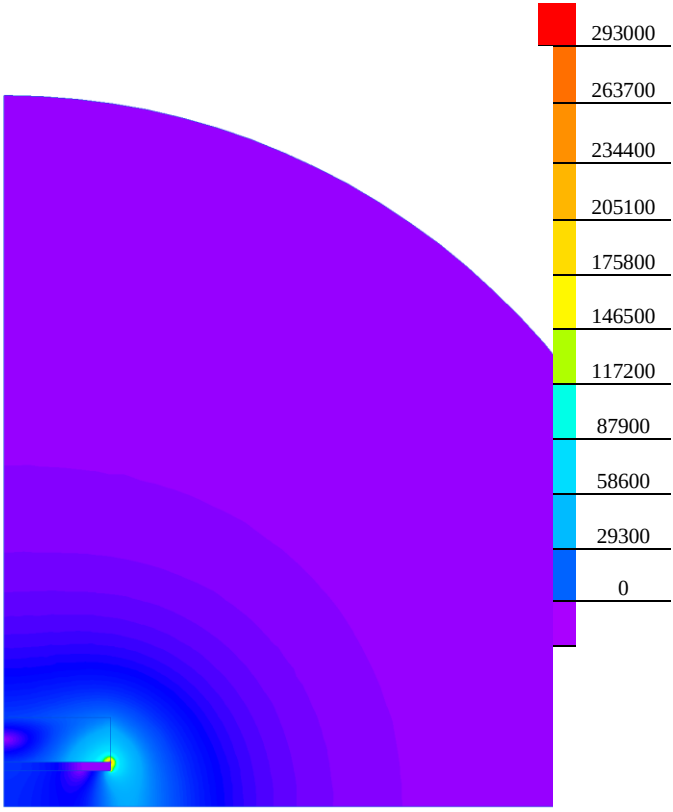
winding. I=52.19 [A]

R1. I=52.17 [A]

C1. I=0.020412 [A]

Results

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



Nonlinear dependencies

Table 2. BH-curve

B [T]	H [A/m]
0	0
0.5	400
0.8	800
1	10000