Problem info

Problem type: AC Magnetics , frequency: 50 Hz,

Geometry model class: Axisymmetric

Problem database file names:

- Problem: *C:\Users\Public\Documents\QuickField 6.3 Examples\HMagn4.pbm*
- Geometry: *C:\Users\Public\Documents\QuickField 6.3 Examples\Hmagn4.mod*
- Material Data: *C:\Users\Public\Documents\QuickField 6.3 Examples\Hmagn4.dhe*
- Material Data 2 (library): *none*
- Electric circuit: *C:\Users\Public\Documents\QuickField 6.3 Examples\hmagn4.qcr*

Results taken from other problems:

- *none*

Geometry model

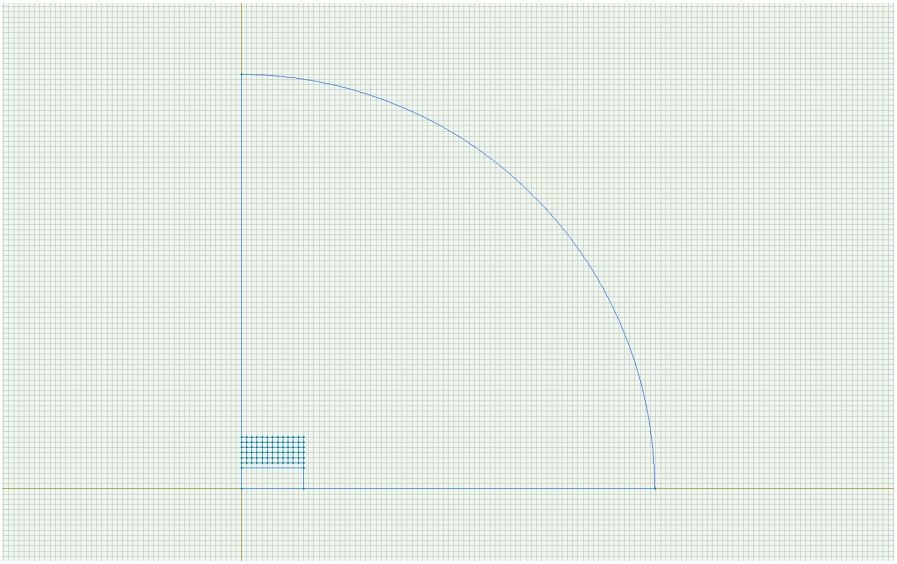
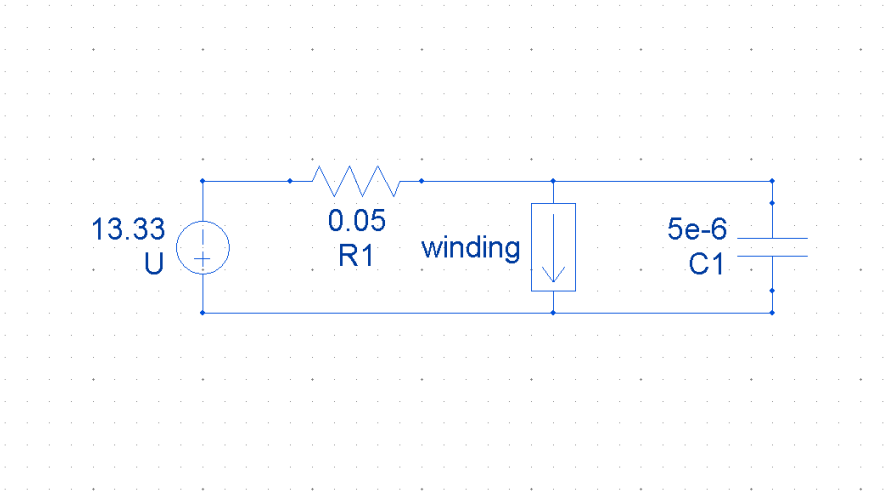


Table 1. Geometry model statistics

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

Number of nodes: 9487.

Electric circuit



Pic. Coupled electric circuit

Circuit elements:

Voltage source U=13.33 [V] 0 [deg]

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"

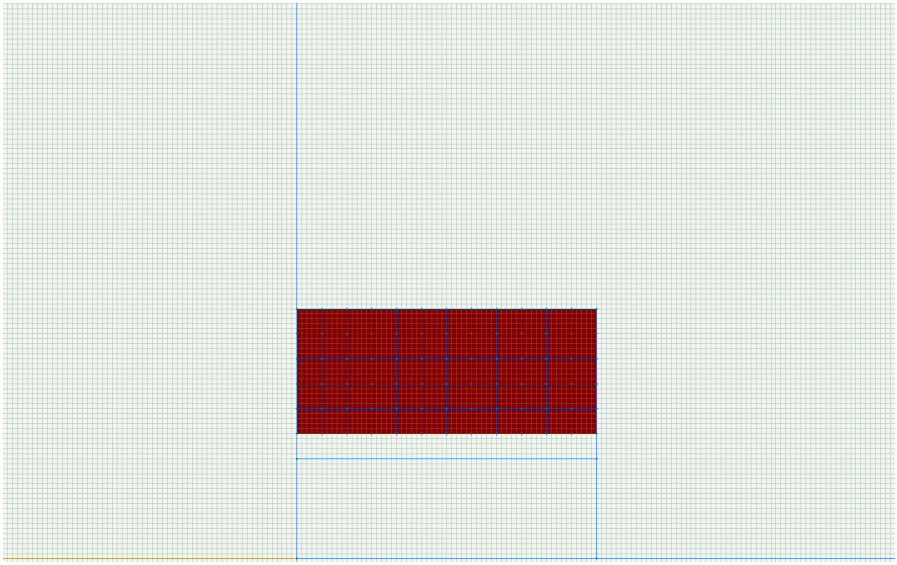
There are (60) objects with this label

Relative magnetic permeability: mu_x=1, mu_y=1

Electric conductivity: sigma=56000000 [S/m]

Current density: j=0 [A/m2], phase 0 [deg]

Conductor's connection: in series



Labelled objects: block "steel core"

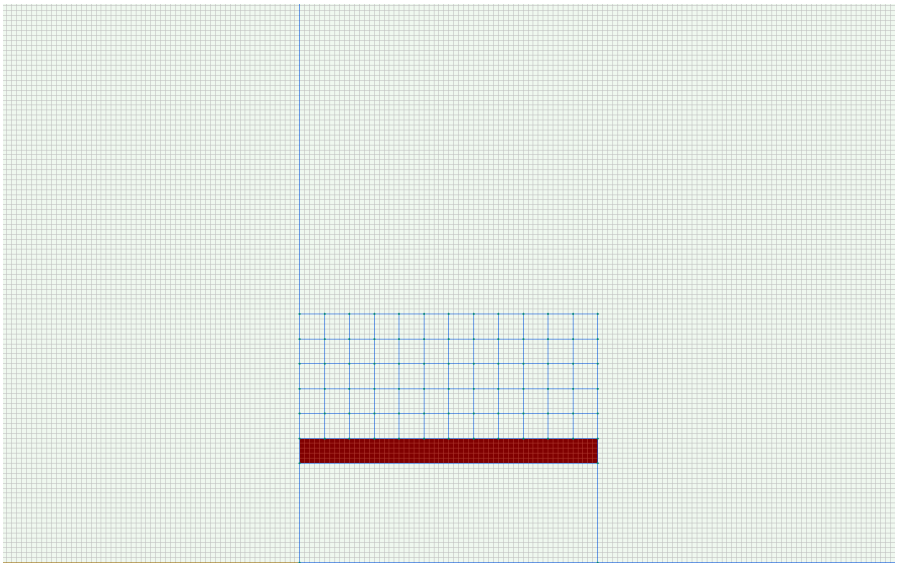
There are (1) objects with this label

Relative magnetic permeability: mu=nonlinear (see Table 2 in the "Nonlinear dependencies" section)

Electric conductivity: sigma=0 [S/m]

Current density: j=0 [A/m2], phase 0 [deg]

Conductor's connection: in parallel



Labelled objects: block "air"

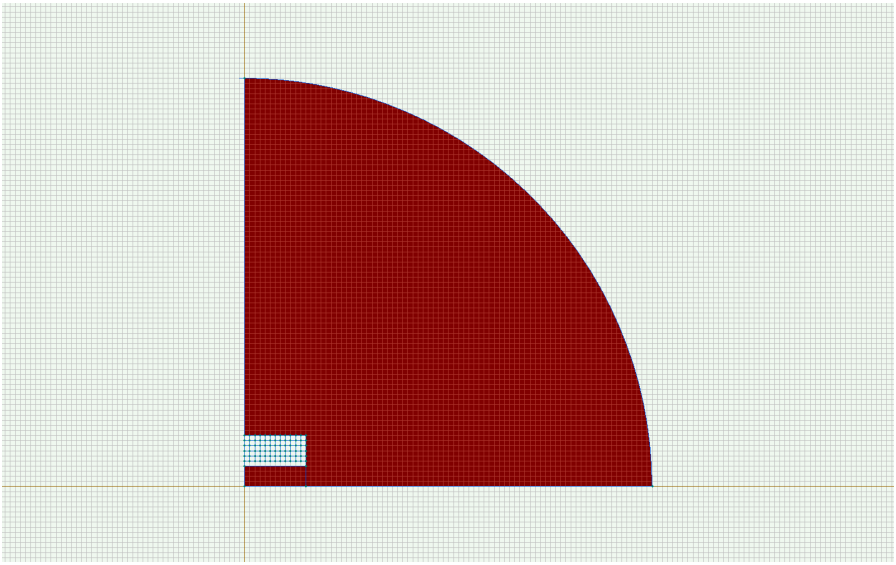
There are (2) objects with this label

Relative magnetic permeability: mu_x=1, mu_y=1

Electric conductivity: sigma=0 [S/m]

Current density: j=0 [A/m2], phase 0 [deg]

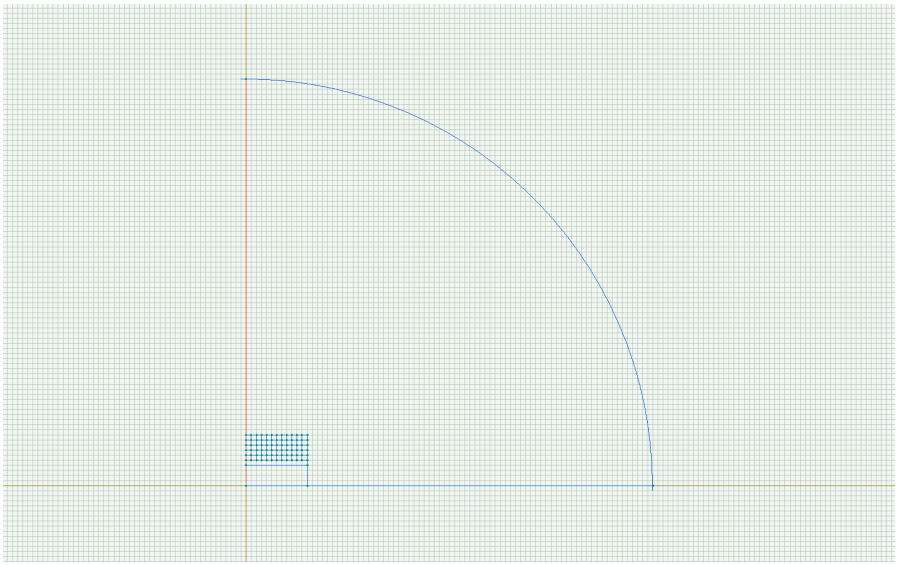
Conductor's connection: in parallel



Labelled objects: edge "symmetry"

There are (8) objects with this label

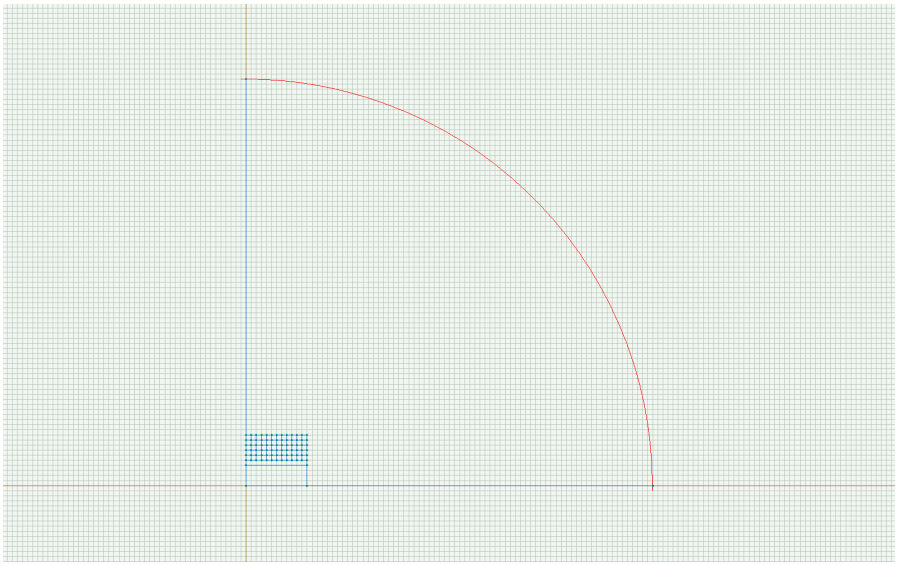
Tangential field: Ht=0 [A/m], phase 0 [deg]



Labelled objects: edge "far away"

There are (1) objects with this label

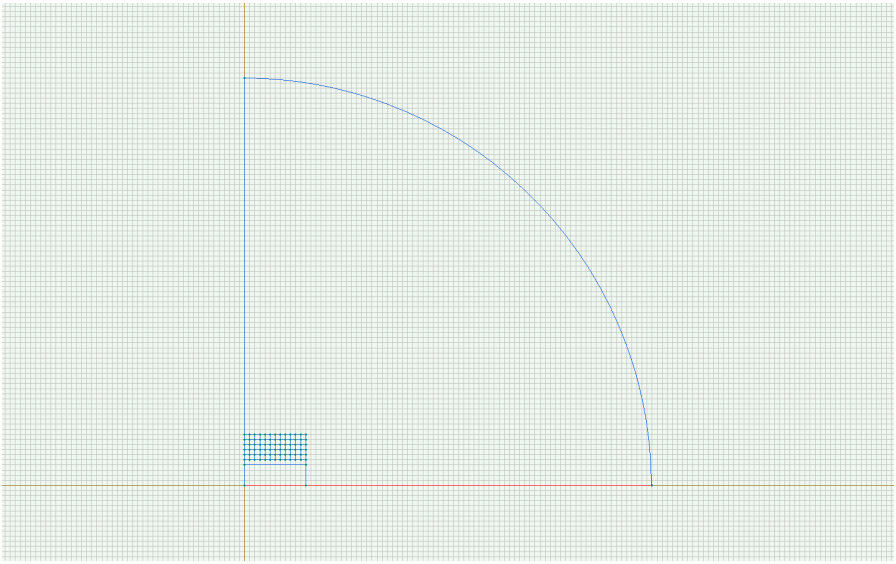
Magnetic potential: A=0 [Wb/m], phase 0 [deg]



Labelled objects: edge "axis of rotation"

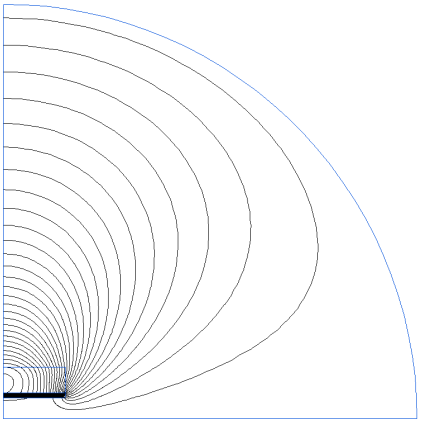
There are (2) objects with this label

Magnetic potential: A=0 [Wb/m], phase 0 [deg]



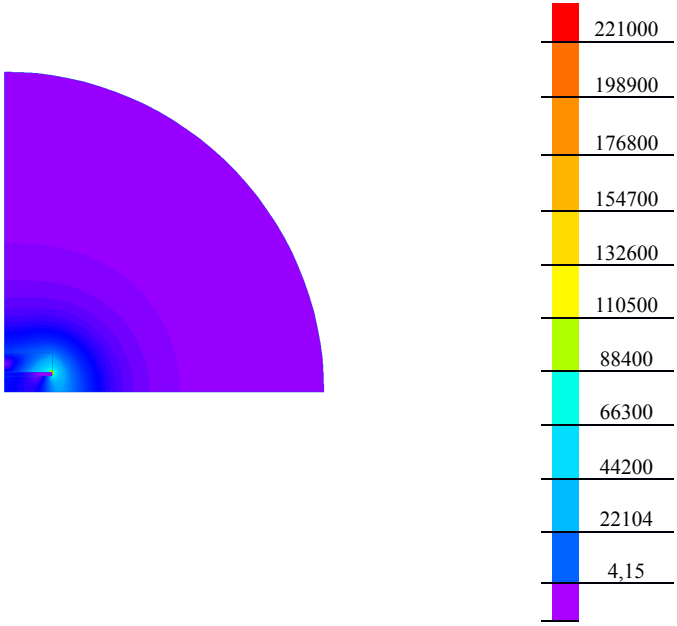
Results

Field lines



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