

# Problem info

Problem type: AC Magnetics , frequency: 60 Hz,

Geometry model class: Axisymmetric

Problem database file names:

- Problem: *Two\_coils.pbm*
- Geometry: *Two\_coils.mod*
- Material Data: *Two\_coils.dhe*
- Material Data 2 (library): *none*
- Electric circuit: *Two\_coils.qcr*

Results taken from other problems:

- *none*

# Geometry model

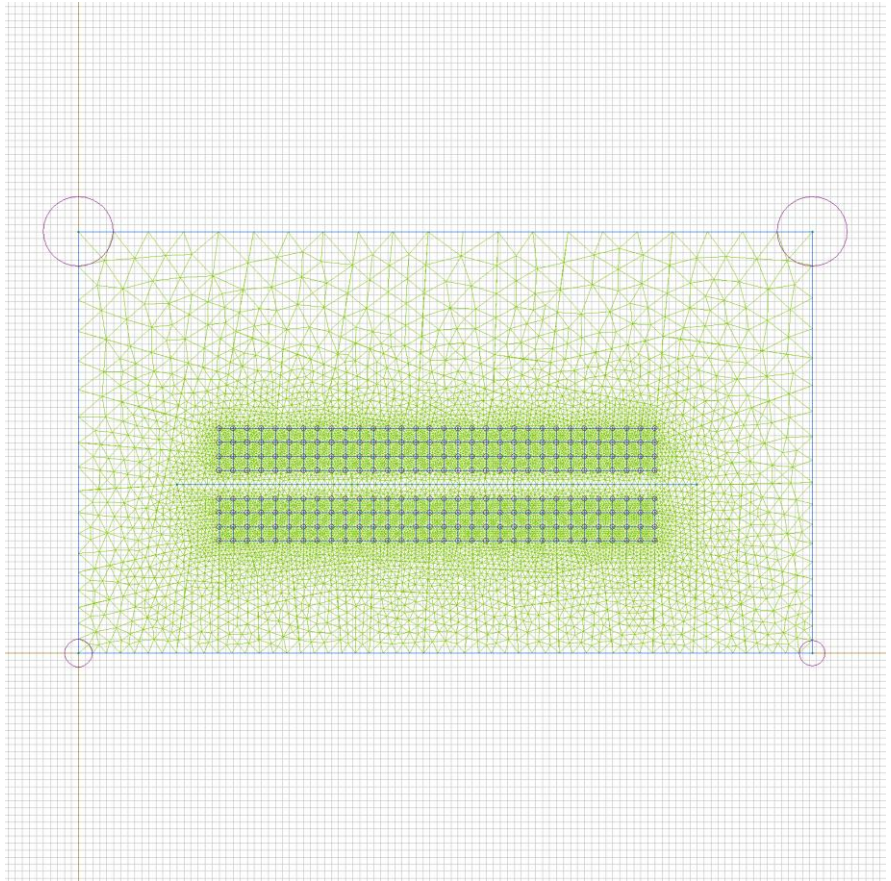


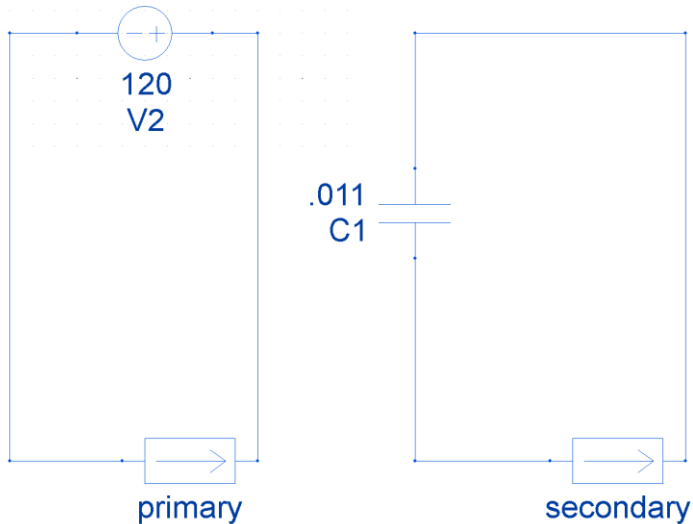
Table 1. Geometry model statistics

|          | With Label | Total |
|----------|------------|-------|
| Blocks   | 3          | 187   |
| Edges    | 2          | 445   |
| Vertices | 0          | 262   |

Number of nodes: 11565.

# Electric circuit

## Coupled electric circuit



### Circuit elements:

QuickField block 'primary'

QuickField block 'secondary'

Voltage source V2=120 [V] 0 [deg]

Capacitor C1=0.011 [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:

- [primary](#)
- [secondary](#)
- [air](#)
- 

Edges:

- [sides](#)
- [superconductor](#)
- 

Vertices:

Detailed information about each label is listed below.

## Labelled objects: block "primary"

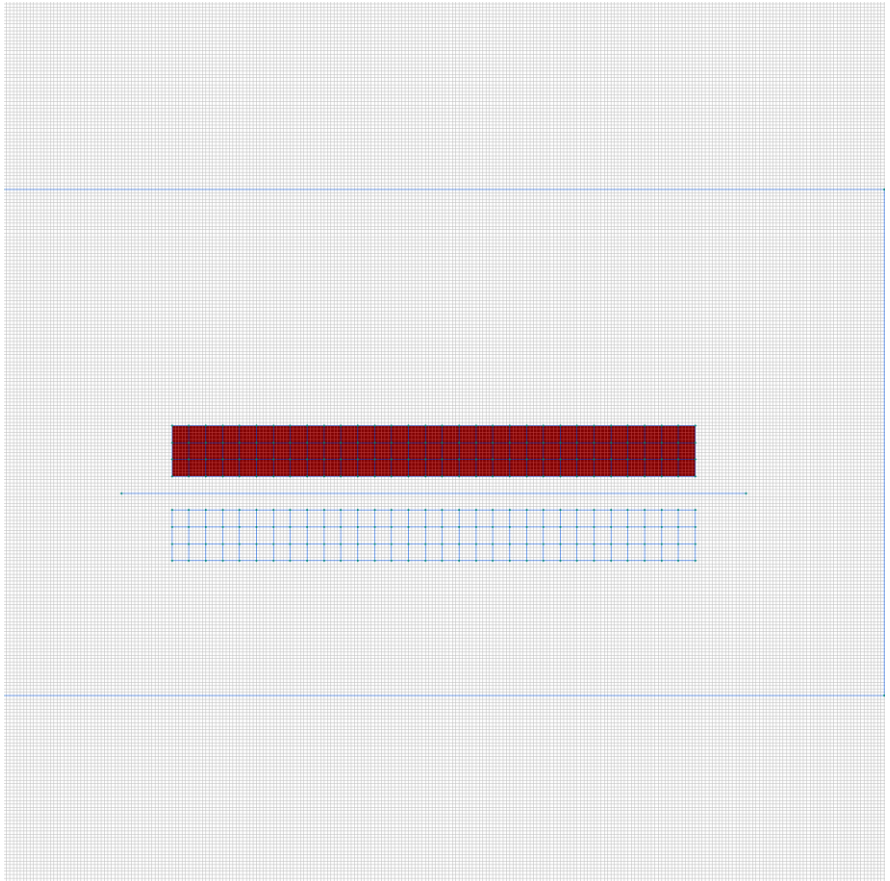
There are (93) objects with this label

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

Electric conductivity:  $\sigma=59600000$  [S/m]

Current density:  $j=0$  [A/m<sup>2</sup>], phase 0 [deg]

Conductor's connection: in series



## Labelled objects: block "secondary"

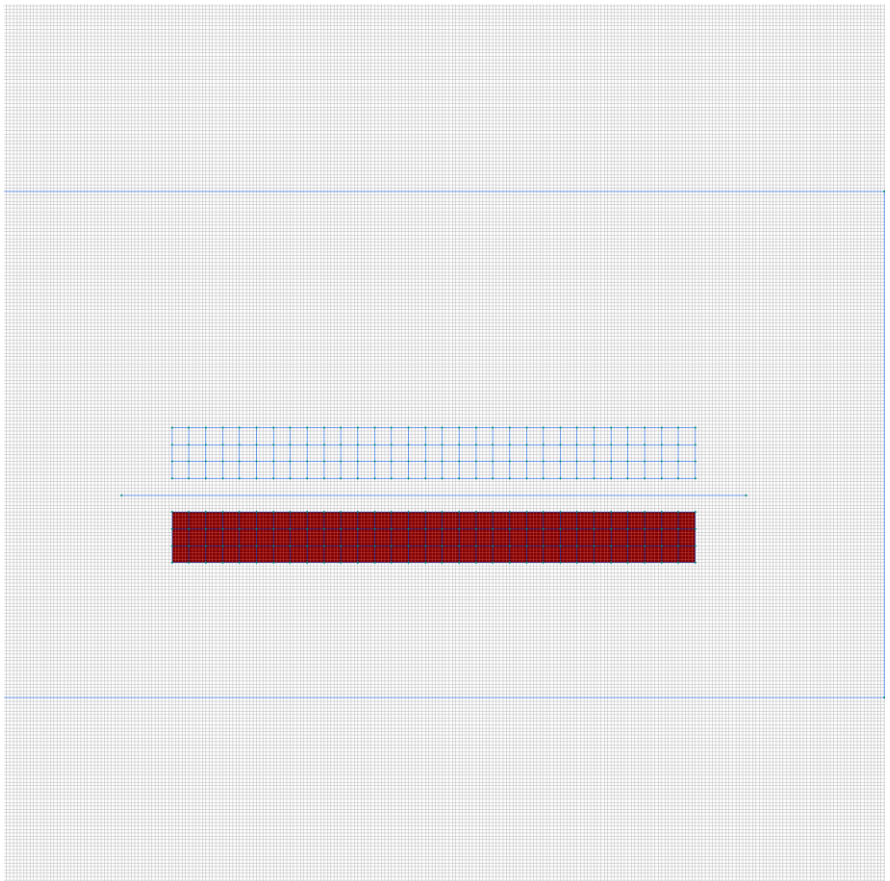
There are (93) objects with this label

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

Electric conductivity:  $\sigma=59600000$  [S/m]

Current density:  $j=0$  [A/m<sup>2</sup>], phase 0 [deg]

Conductor's connection: in series



Labelled objects: block "air"

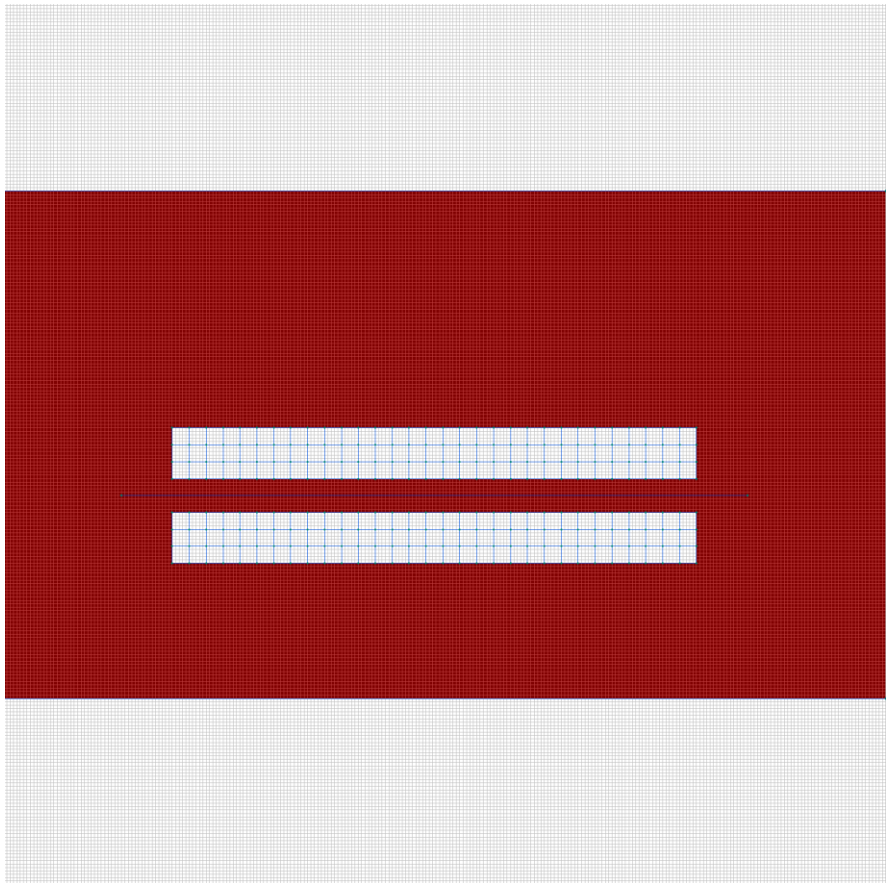
There are (1) objects with this label

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

Electric conductivity:  $\sigma=0$  [S/m]

Current density:  $j=0$  [A/m<sup>2</sup>], phase 0 [deg]

Conductor's connection: in parallel

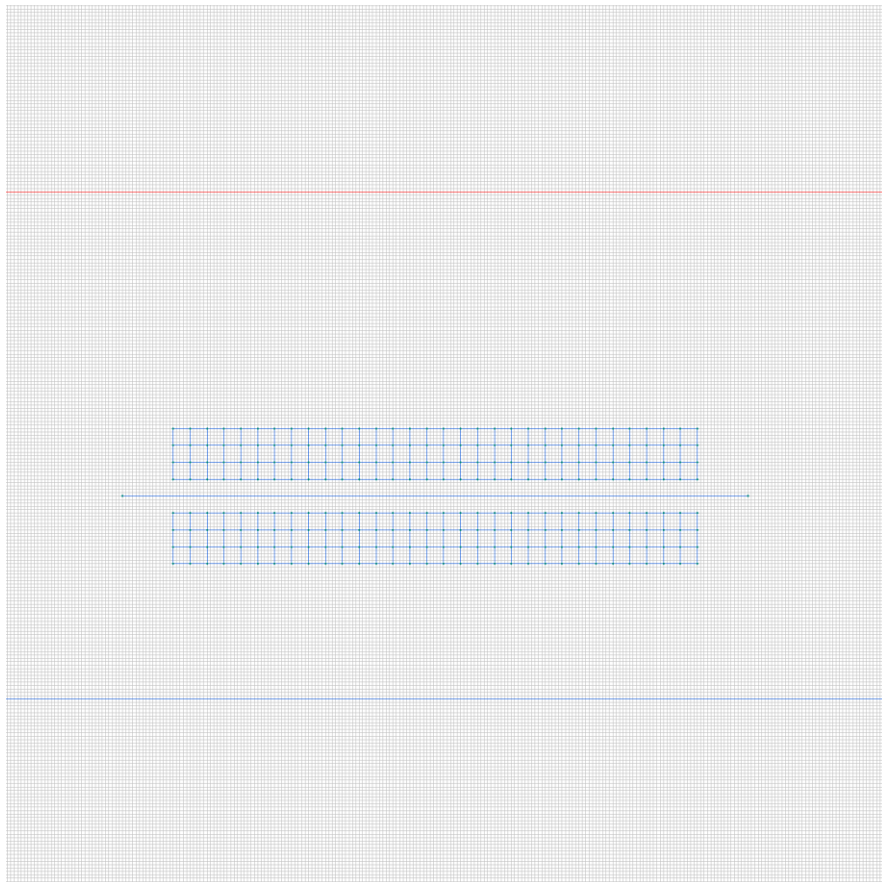




## Labelled objects: edge "sides"

There are (3) objects with this label

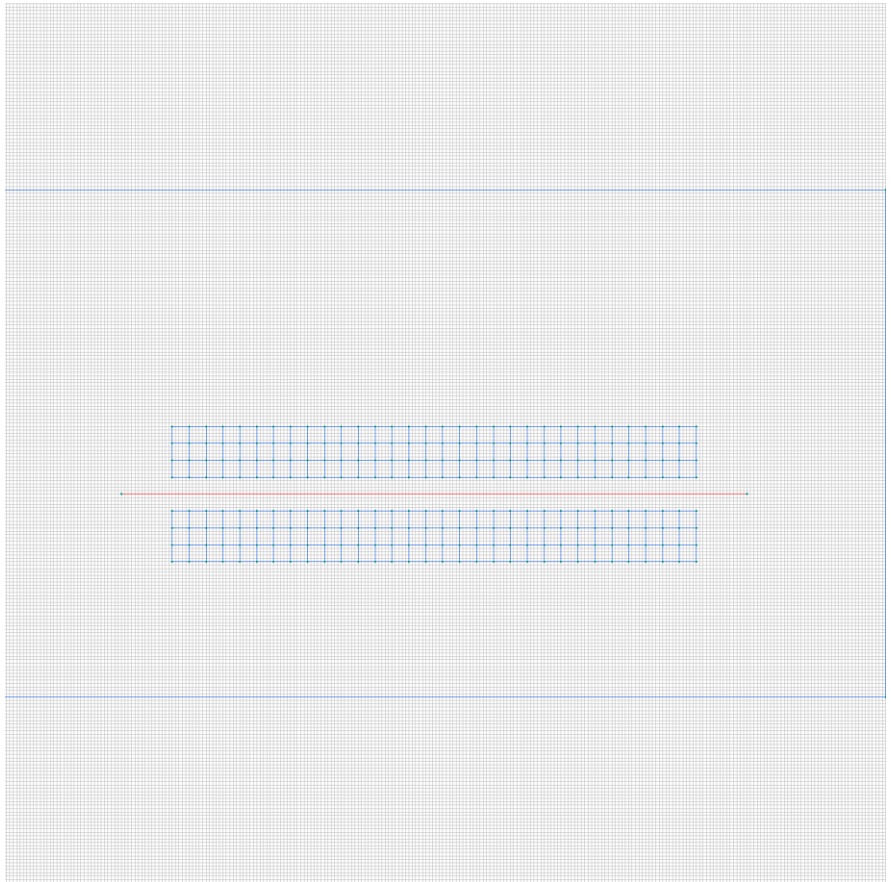
Magnetic potential:  $A=0$  [Wb/m], phase 0 [deg]



## Labelled objects: edge "superconductor"

There are (1) objects with this label

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



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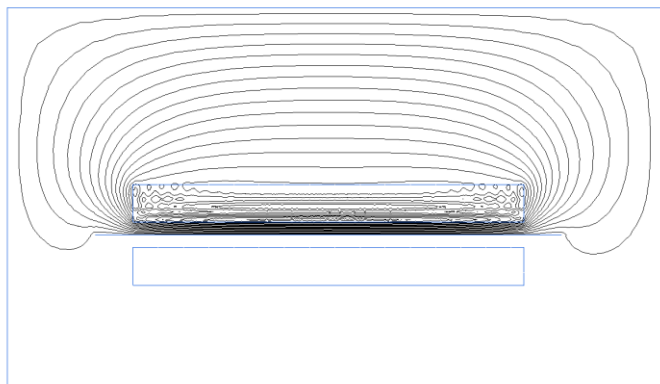
[Labelled Objects](#)

[Results](#)

[Nonlinear dependencies](#)

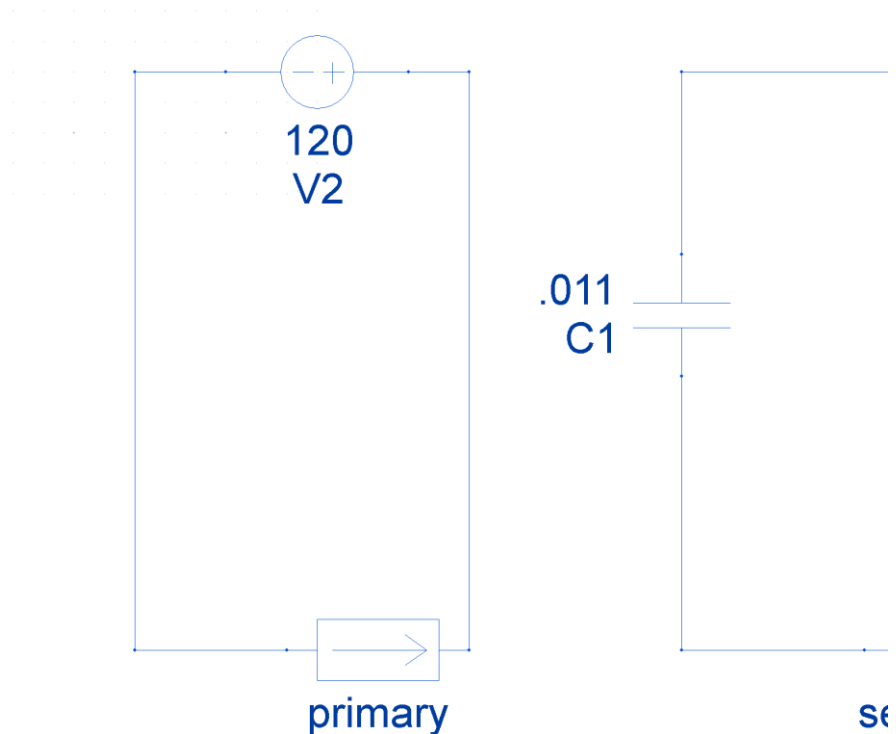
# Results

## Field lines



# Results

## Electric circuit currents



### Circuit elements:

primary. I=706.7 [A], phase=99.99 [deg]

secondary. I=0.4018 [A], phase=92.51 [deg]

V2. I=706.7 [A], phase=-80.01 [deg]

C1. I=0.4061 [A], phase=-88.44 [deg]

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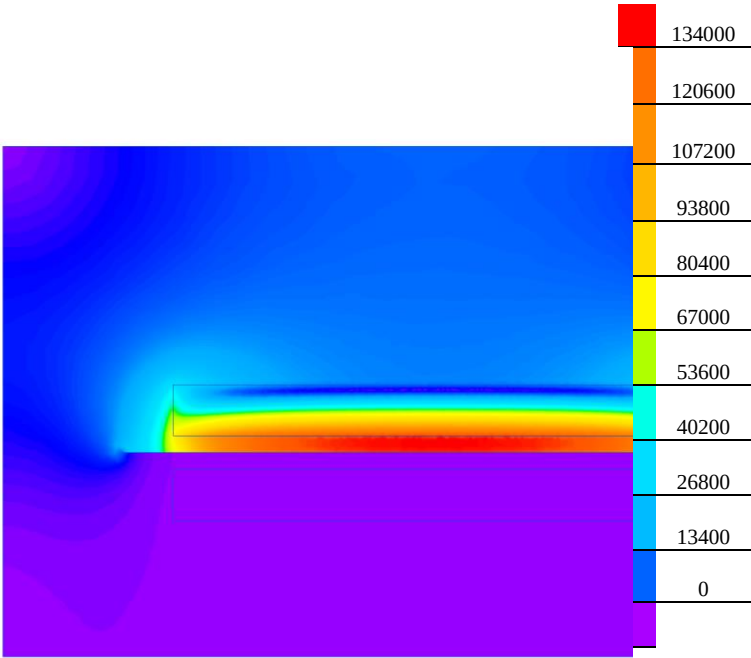
[Labelled Objects](#)

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# Results

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



# Nonlinear dependencies

No non-linear dependencies are used in this problem data