

Problem info

Problem type: Transient Electric (integration time: 7.00000018696301E-05 s.)

Geometry model class: Axisymmetric

Problem database file names:

- Problem: *telec2.pbm*
- Geometry: *Telec2.mod*
- Material Data: *Telec2.dtv*
- Material Data 2 (library): *none*
- Electric circuit: *none*

Results taken from other problems:

- *none*

Geometry model

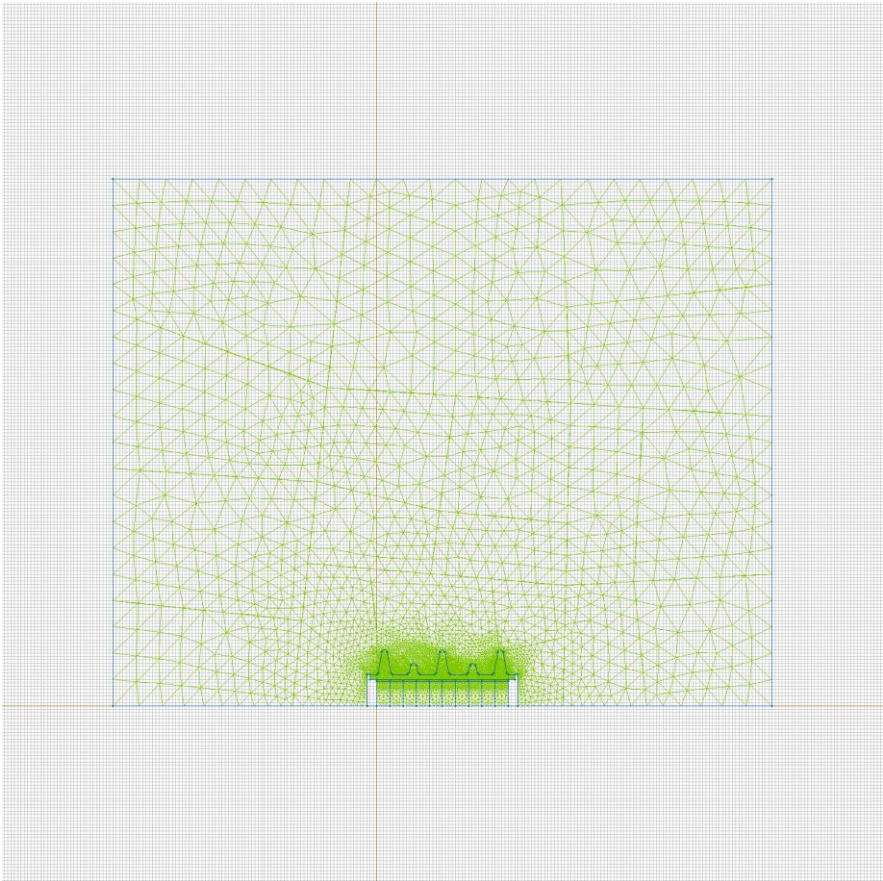


Table 1. Geometry model statistics

	With Label	Total
Blocks	3	15
Edges	11	80
Vertices	0	66

Number of nodes: 7721.

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:

- [ZnO](#)
- [air](#)
- [ceramic](#)
-

Edges:

- [ground](#)
- [high voltage](#)
- [disk1](#)
- [disk2](#)
- [disk3](#)
- [disk4](#)
- [disk5](#)
- [disk6](#)
- [disk7](#)
- [disk8](#)
- [disk9](#)
-

Vertices:

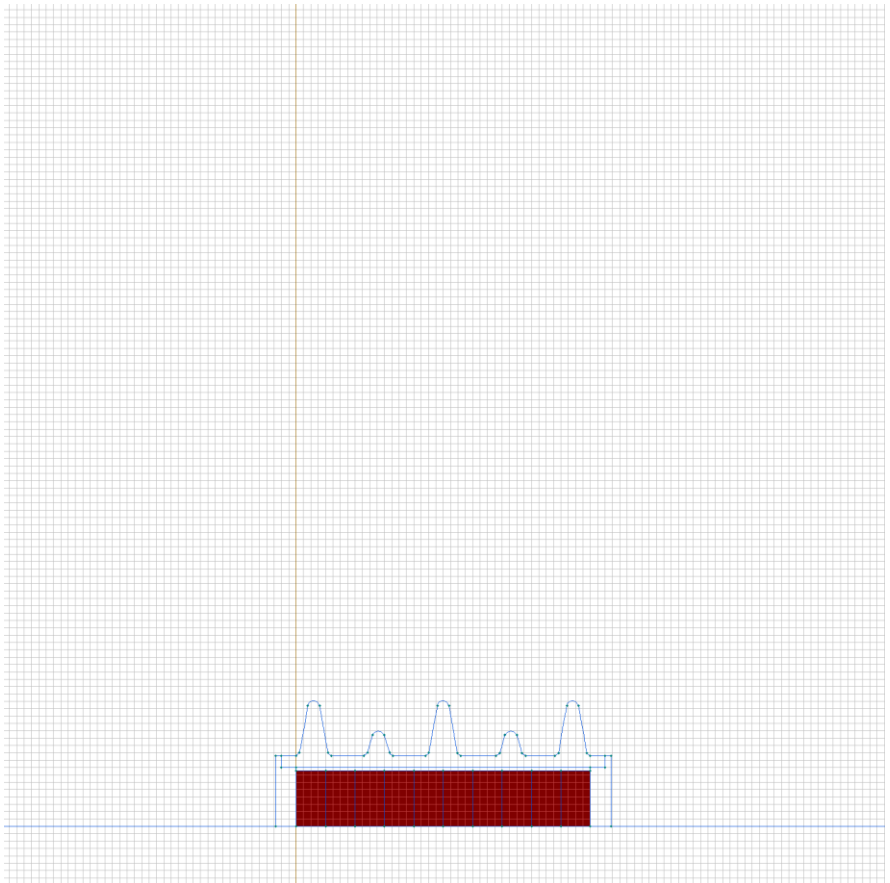
Detailed information about each label is listed below.

Labelled objects: block "ZnO"

There are (10) objects with this label

Relative electric permittivity: $\epsilon_x=60$, $\epsilon_y=60$

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

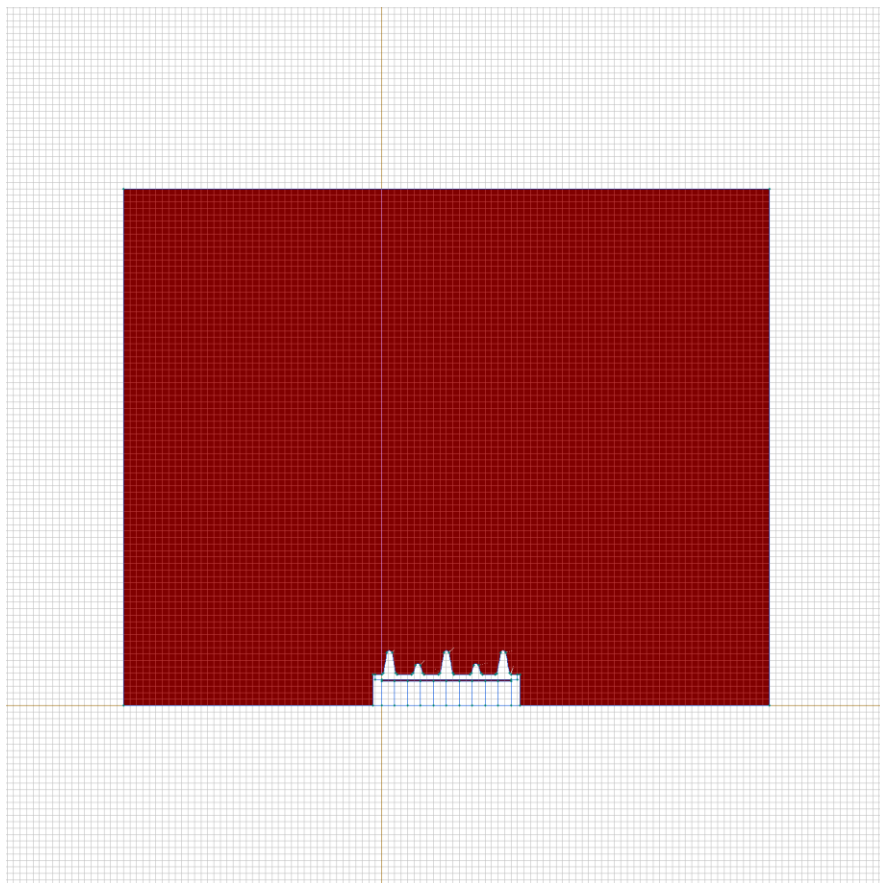


Labelled objects: block "air"

There are (2) objects with this label

Relative electric permittivity: $\epsilon_{x=1}$, $\epsilon_{y=1}$

Electrical conductivity: $\sigma_{x=0}$ S/m, $\sigma_{y=0}$ [S/m]

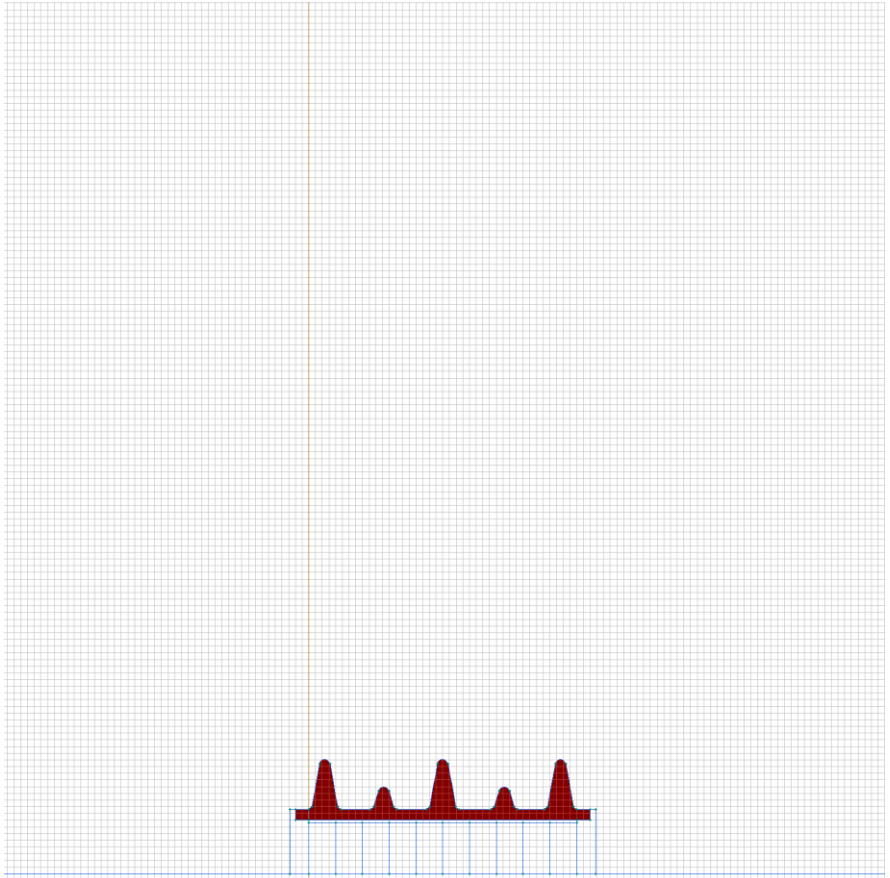


Labelled objects: block "ceramic"

There are (1) objects with this label

Relative electric permittivity: $\epsilon_{x=3}$, $\epsilon_{y=3}$

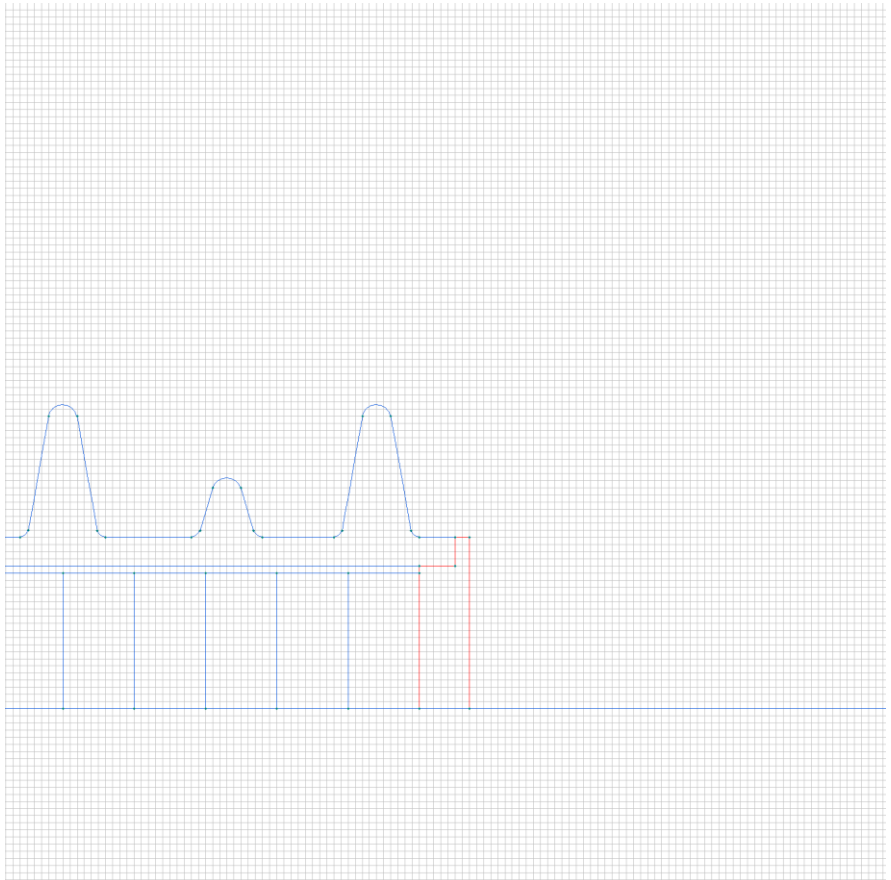
Electrical conductivity: $\sigma_x=0.000000000001$ S/m,
 $\sigma_y=0.000000000001$ [S/m]



Labelled objects: edge "ground"

There are (6) objects with this label

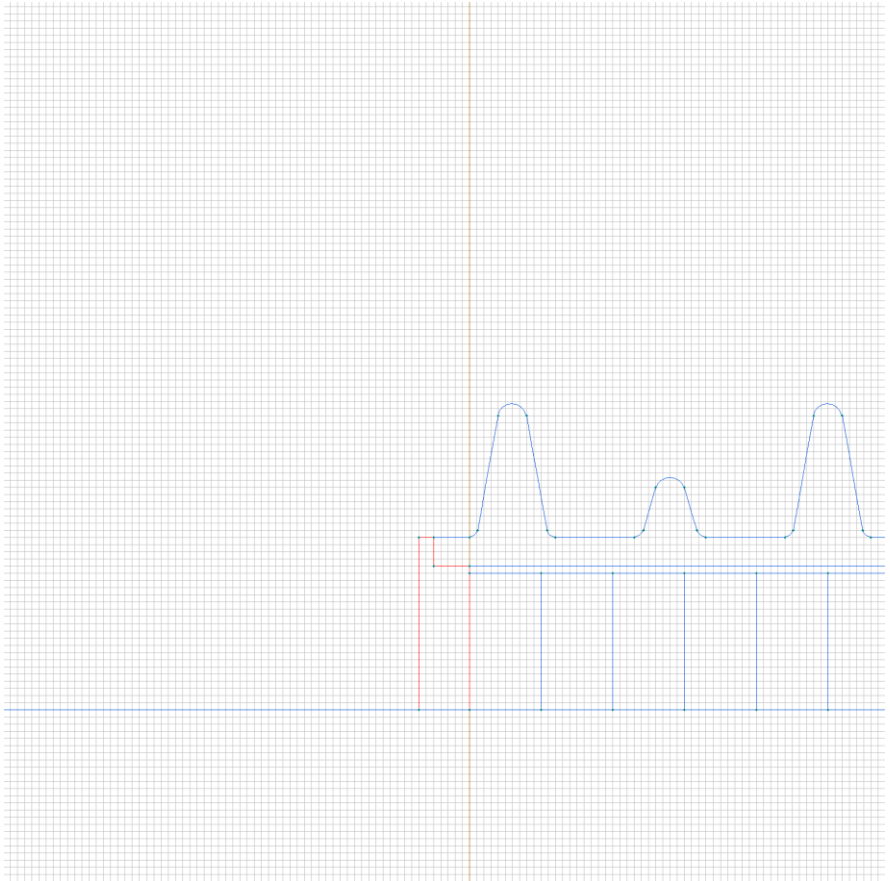
Voltage: $U=0$ [V]



Labelled objects: edge "high voltage"

There are (6) objects with this label

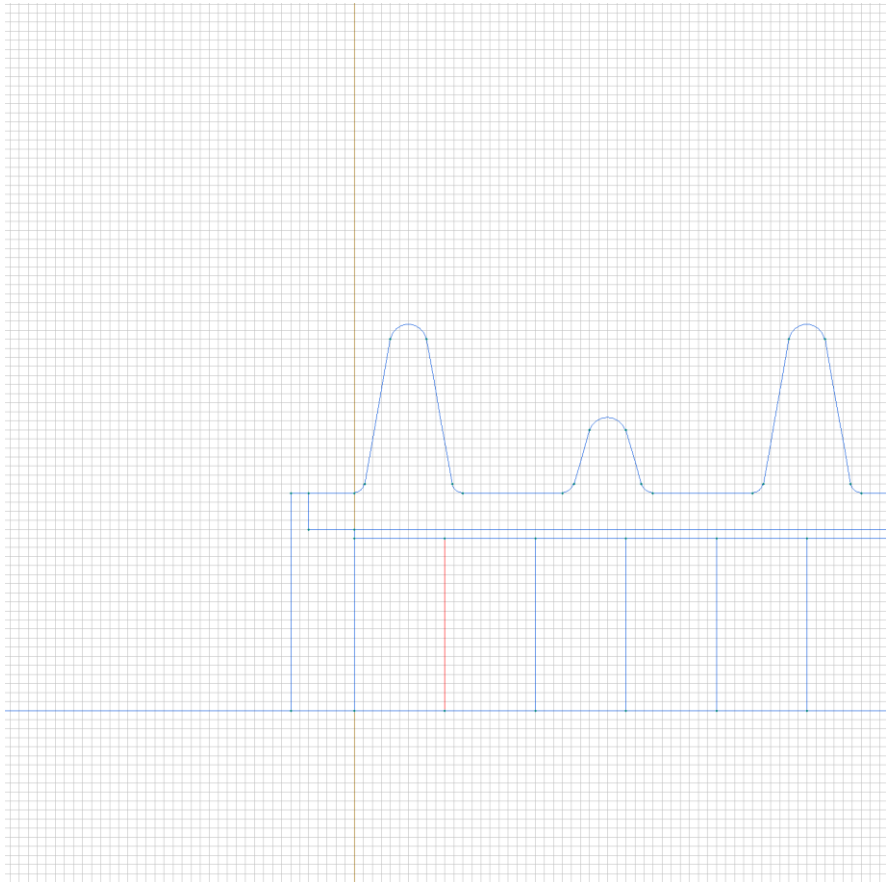
Voltage: $U=35000 + 3e15*(t-10e-6)^2 * \exp(-1e5*(t-10e-6))$ [V]



Labelled objects: edge "disk1"

There are (1) objects with this label

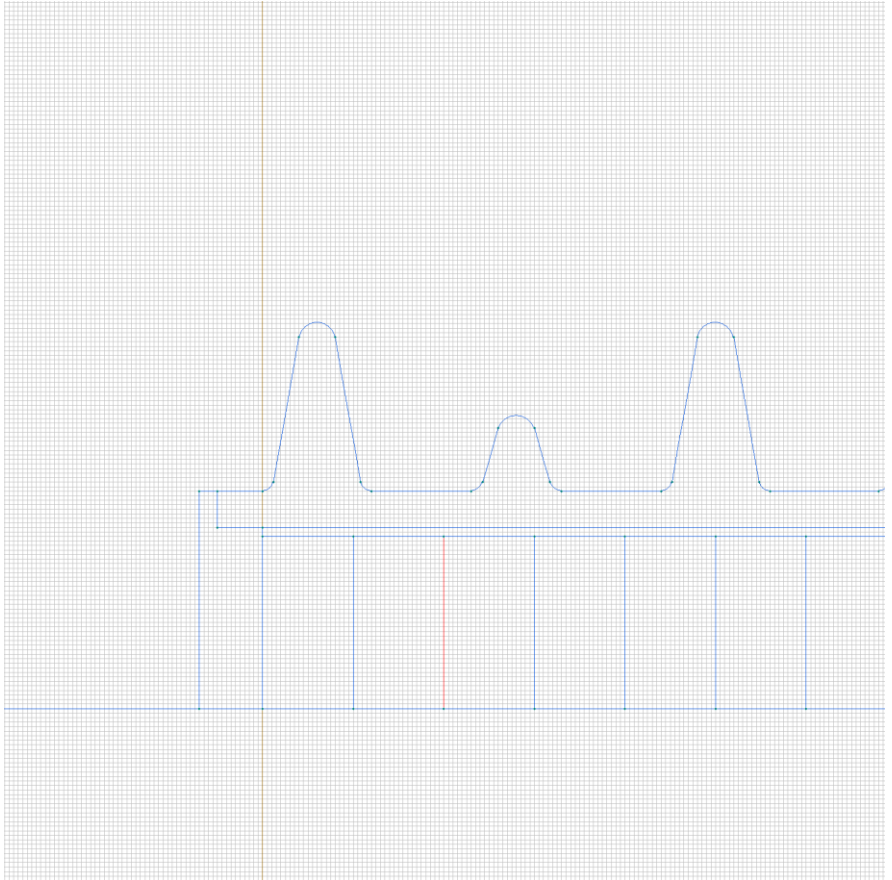
Floating conductor (equal voltage)



Labelled objects: edge "disk2"

There are (1) objects with this label

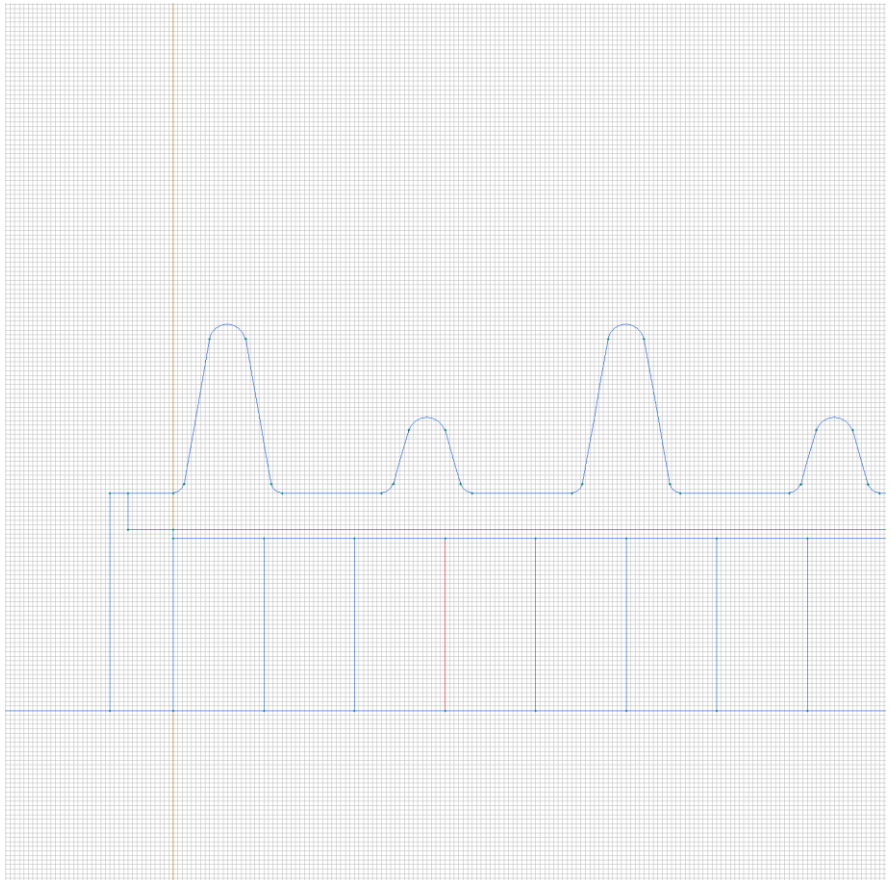
Floating conductor (equal voltage)



Labelled objects: edge "disk3"

There are (1) objects with this label

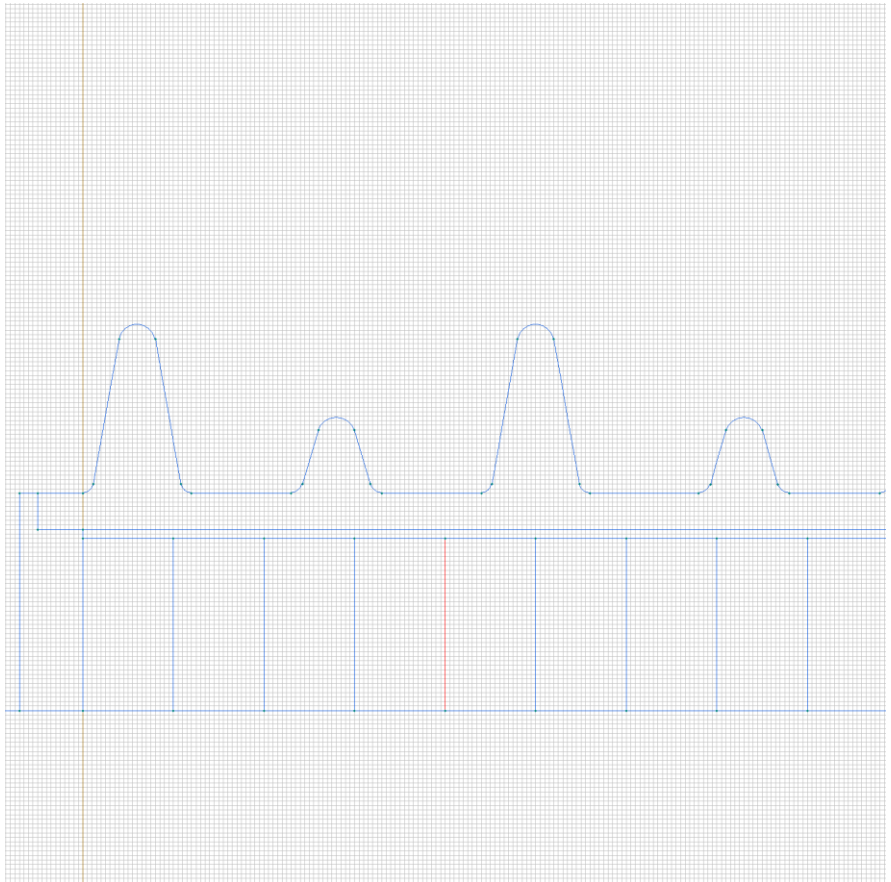
Floating conductor (equal voltage)



Labelled objects: edge "disk4"

There are (1) objects with this label

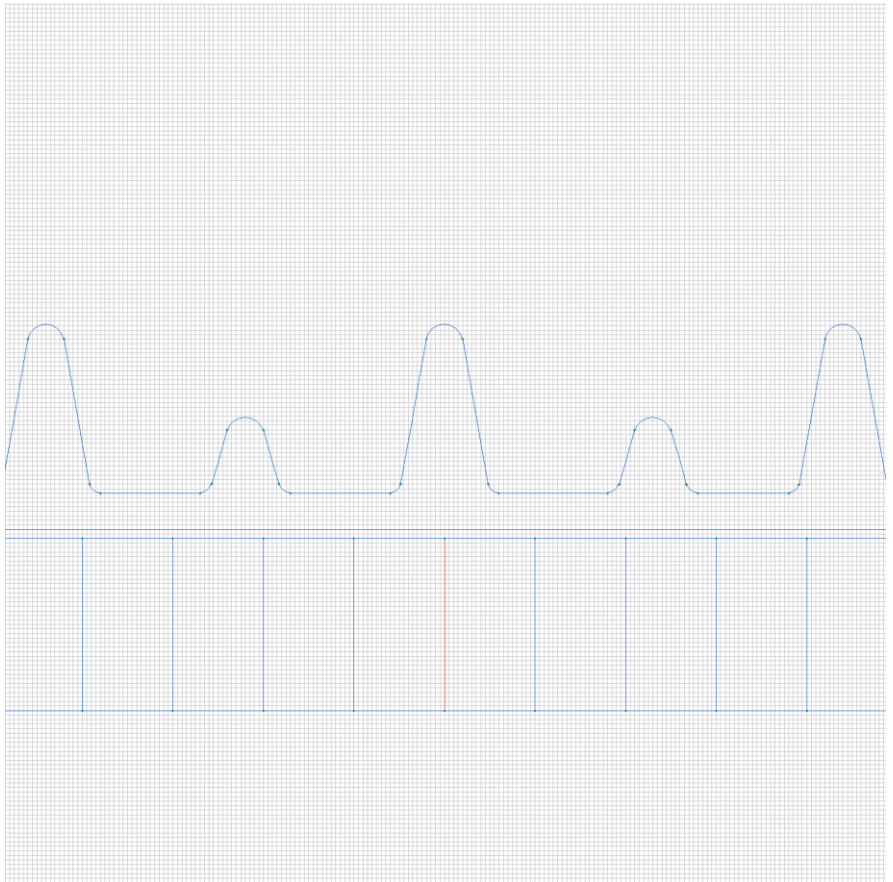
Floating conductor (equal voltage)



Labelled objects: edge "disk5"

There are (1) objects with this label

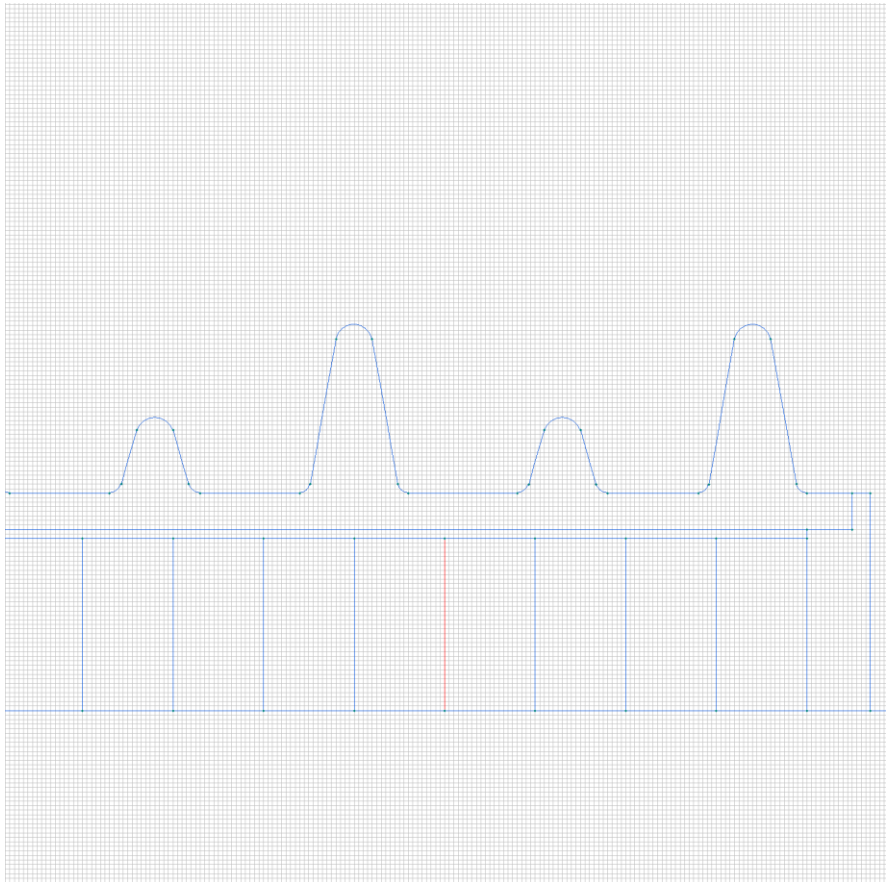
Floating conductor (equal voltage)



Labelled objects: edge "disk6"

There are (1) objects with this label

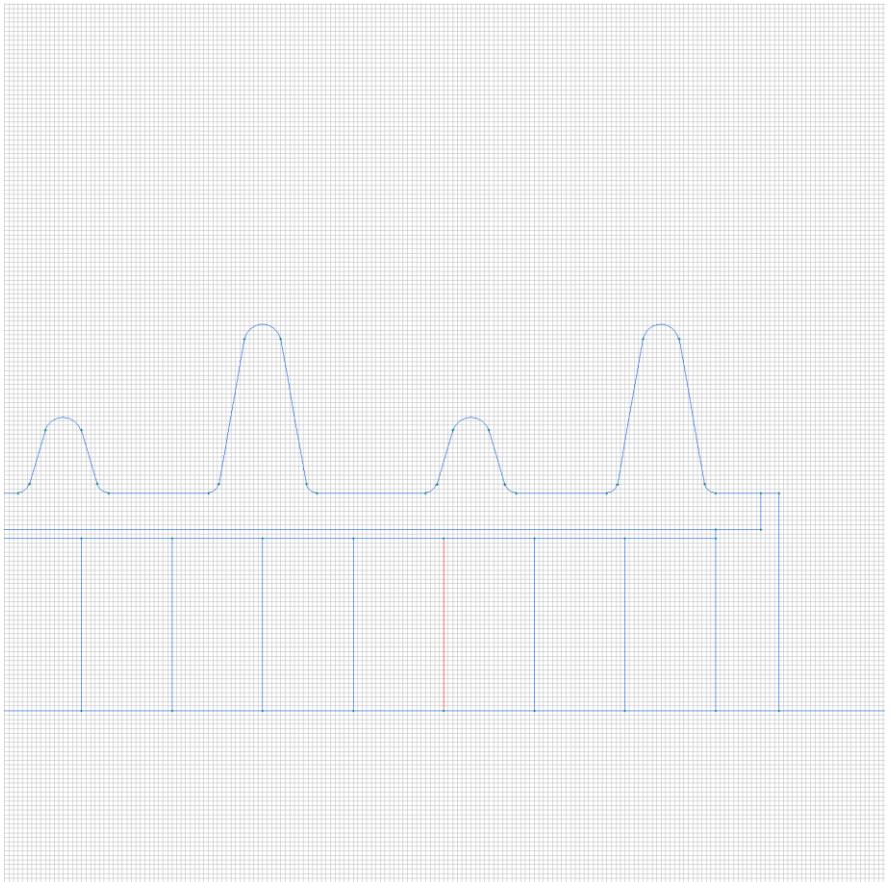
Floating conductor (equal voltage)



Labelled objects: edge "disk7"

There are (1) objects with this label

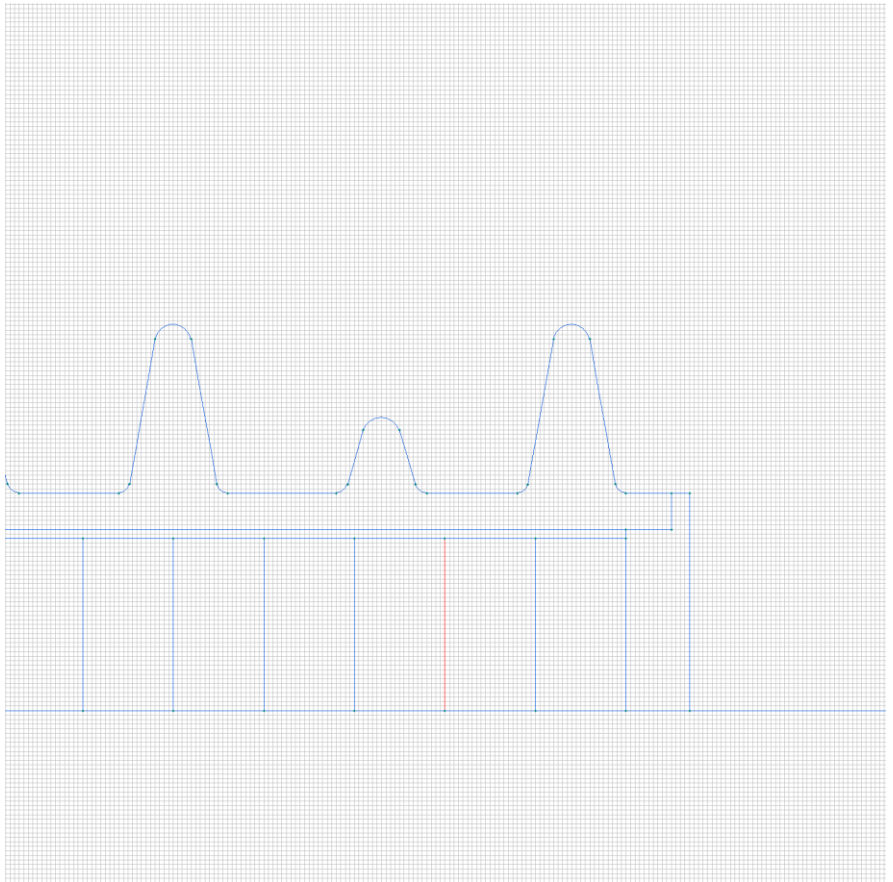
Floating conductor (equal voltage)



Labelled objects: edge "disk8"

There are (1) objects with this label

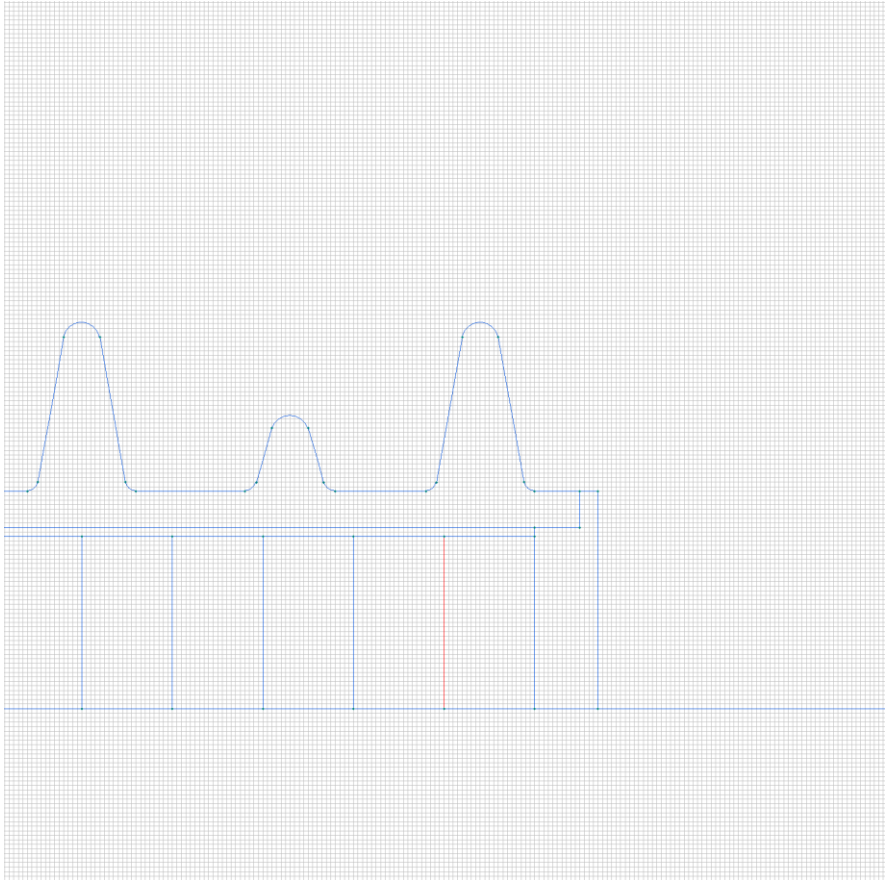
Floating conductor (equal voltage)



Labelled objects: edge "disk9"

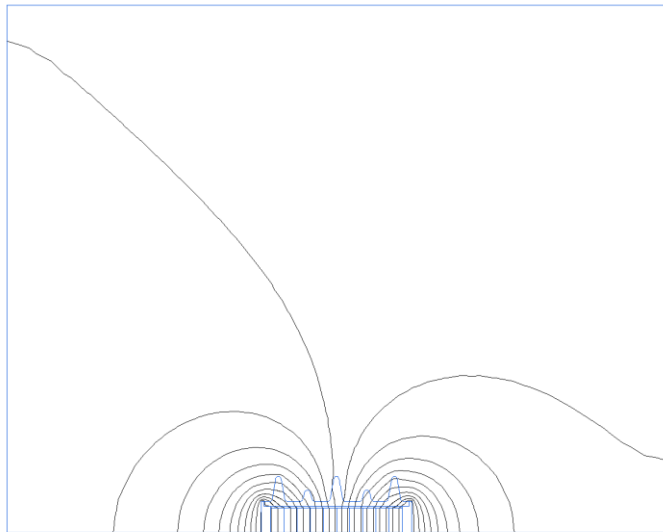
There are (1) objects with this label

Floating conductor (equal voltage)



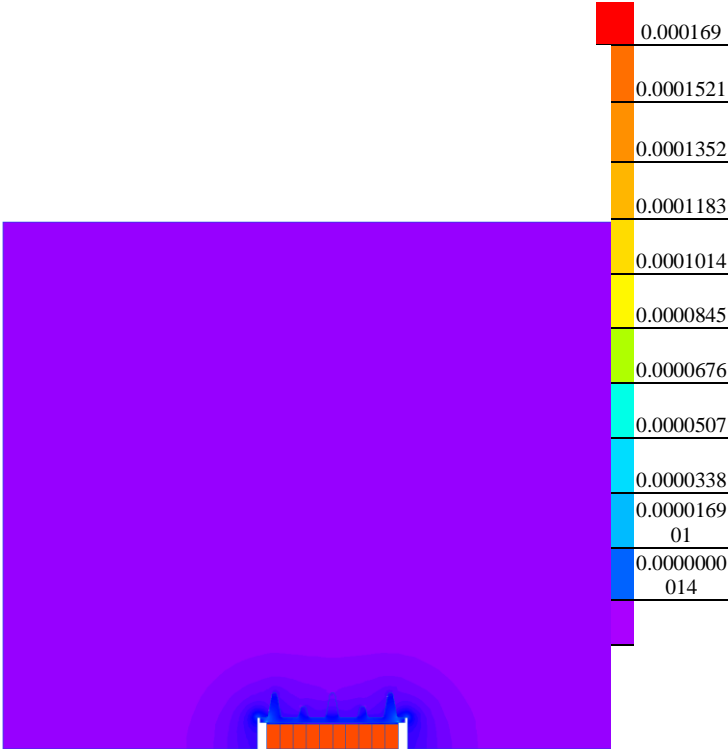
Results

Field lines



Results

Color map of Electric induction $|D|$ [C/m²]



Nonlinear dependencies

Table 2. Electric conductivity

T [K]	sigma [S/m]
0	0.0000002
190000	0.000001
250000	0.000038
430000	0.0014
1000000	0.1