# Problem info

Problem type: Stress Analysis
Geometry model class: Axisymmetric
Problem database file names:

- Problem: *thermal_control_2.pbm*
- Geometry: *Thermal_control_2.mod*
- Material Data: *Thermal_control_2.dsa*
- Material Data 2 (library): *none*
- Electric circuit: *none*

Results taken from other problems:

- *none*

# Geometry model

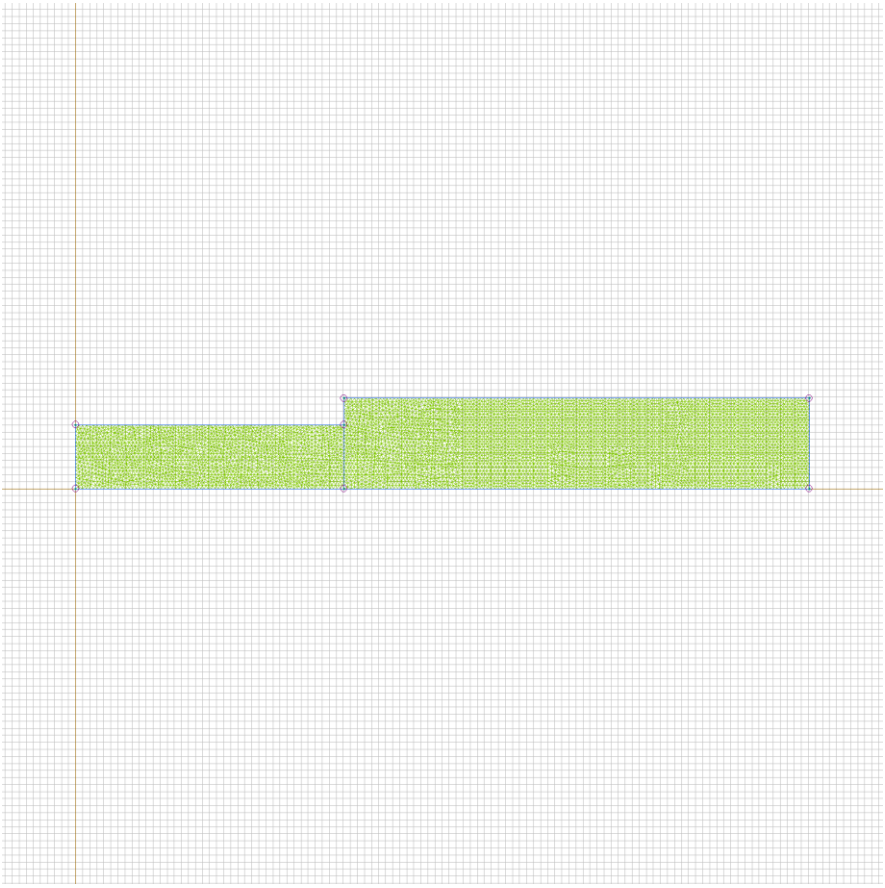


Table 1. Geometry model statistics

| | With Label | Total |
|---|---|---|
| Blocks | 2 | 2 |
| Edges | 3 | 8 |
| Vertices | 0 | 7 |

Number of nodes: 6355.

# 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)

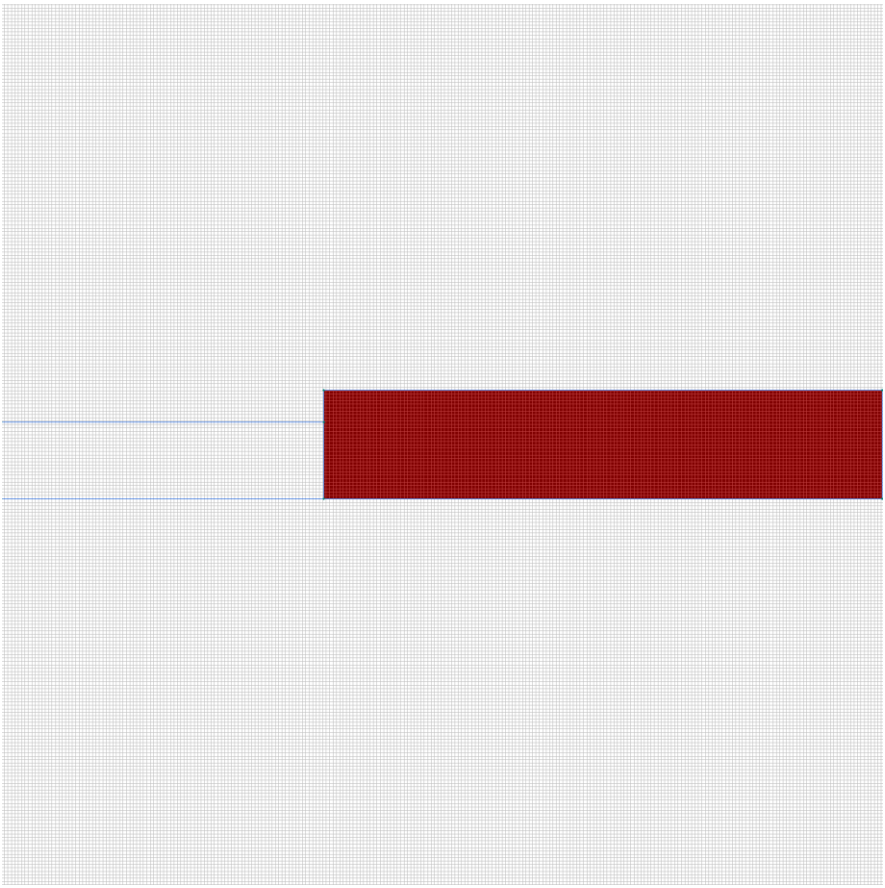
| Blocks: | Edges: | Vertices: |
|---|---|---|
| • магний<br>• латунь<br>• | • закреплено<br>• центр латунь<br>• центр магний<br>• | |

Detailed information about each label is listed below.

## Labelled objects: block "магний"

There are (1) objects with this label

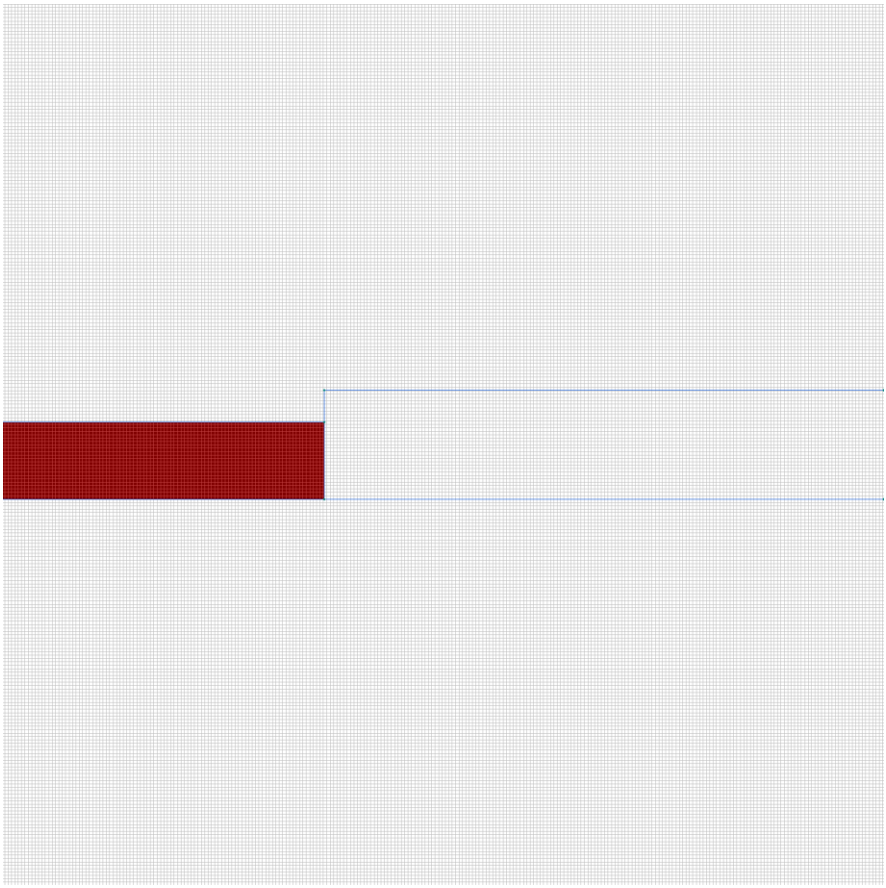
Young's moduli: Ex=44800000000 [N/m2], Ey=44800000000 [N/m2], Ez=44800000000 [N/m2]
Poisson's ratios: v_yx=0.33, v_zx=0.33, v_zy=0.33
Shear modulus: G_xy=16842000000 [N/m2]
Coefficient of thermal expansion: a_x=2.59999997069826E-05 [1/K], a_y=2.59999997069826E-05 [1/K], a_z=2.59999997069826E-05 [1/K]
Difference of temperature: DeltaT=-212.45 [K]
Allowable tension: sigma_x=0 [N/m2], sigma_y=0 [N/m2]
Allowable compression: sigma_x=0 [N/m2], sigma_y=0 [N/m2]
Allowable shear: tau_xy(+)=0 [N/m2], tau_xy(-)=0 [N/m2]



## Labelled objects: block "латунь"

There are (1) objects with this label

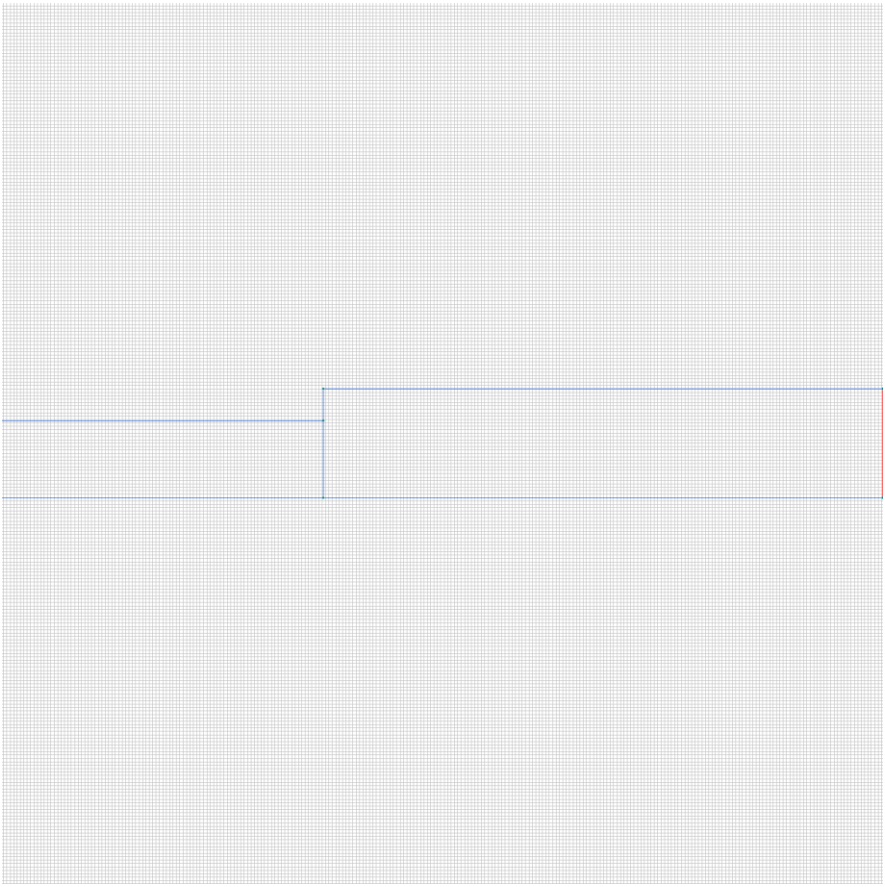
Young's moduli: Ex=103400000000 [N/m2], Ey=103400000000 [N/m2], Ez=103400000000 [N/m2]
Poisson's ratios: v_yx=0.35, v_zx=0.35, v_zy=0.35
Shear modulus: G_xy=38300000000 [N/m2]
Coefficient of thermal expansion:
a_x=1.80000006366754E-05 [1/K],
a_y=1.80000006366754E-05 [1/K],
a_z=1.80000006366754E-05 [1/K]
Difference of temperature: DeltaT=-212.45 [K]
Allowable tension: sigma_x=0 [N/m2], sigma_y=0 [N/m2]
Allowable compression: sigma_x=0 [N/m2], sigma_y=0 [N/m2]
Allowable shear: tau_xy(+)=0 [N/m2], tau_xy(-)=0 [N/m2]



## Labelled objects: edge "закреплено"

There are (2) objects with this label

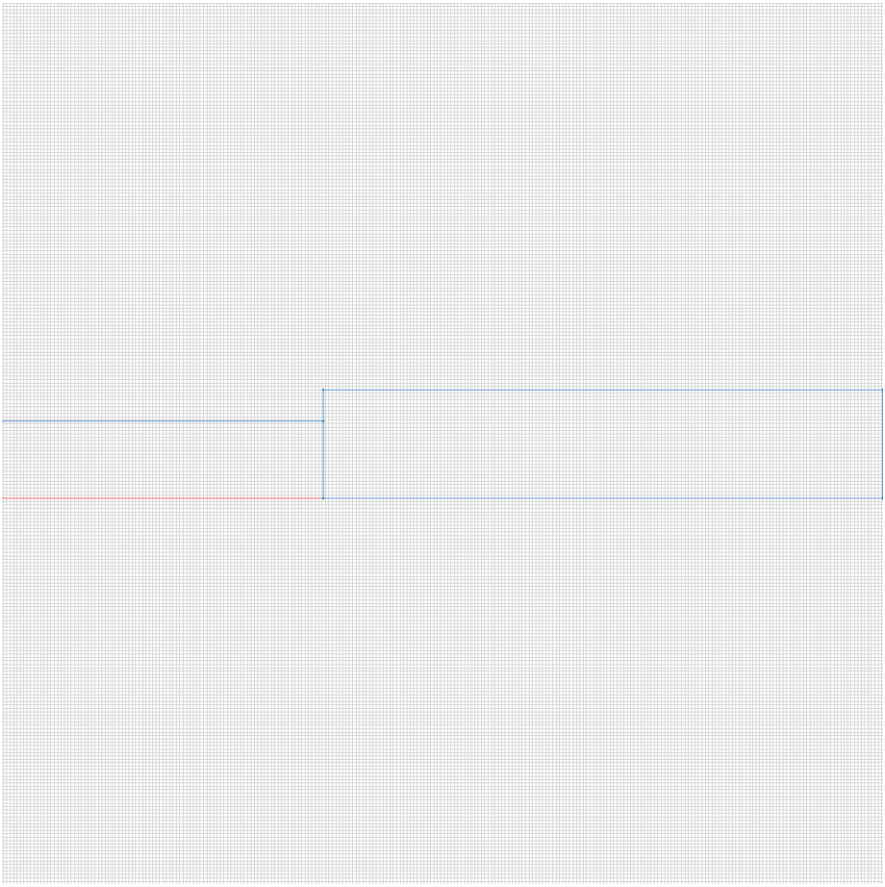
Prescribed displacement: d_x = 0 + 0*x + 0*y [in]
Surface force: f_y=0 [N/m2]



# Labelled objects: edge "центр латунь"

There are (1) objects with this label

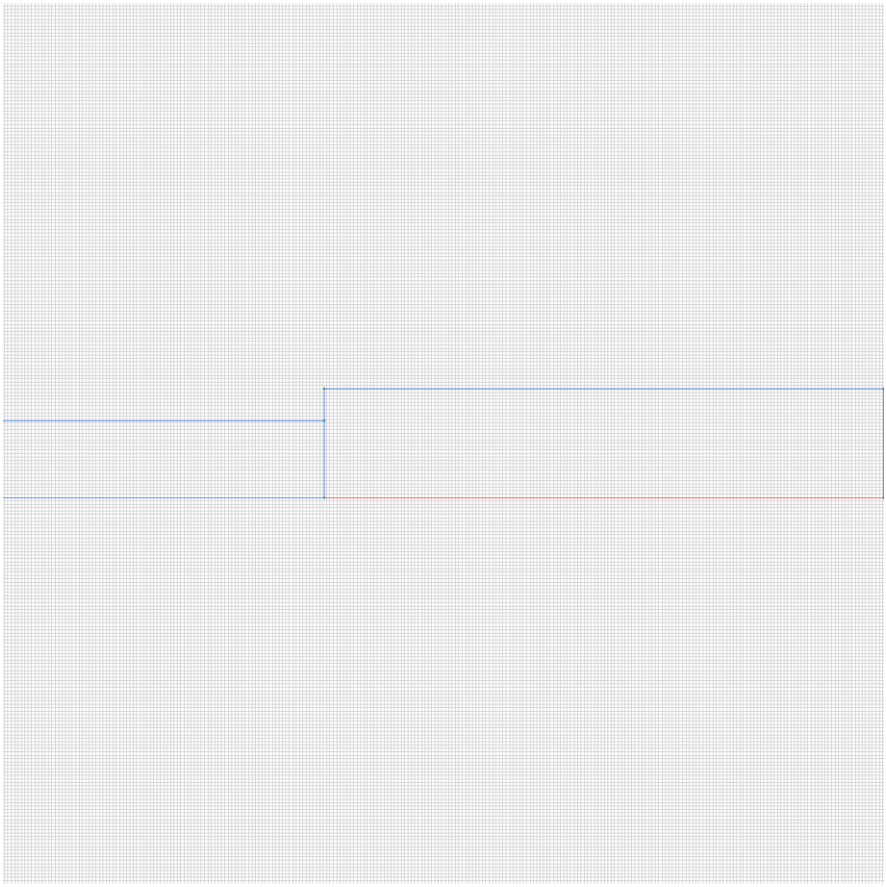
Surface force: f_x=0 [N/m2]
Prescribed displacement: d_y = 0 + 0*x + 0*y [in]



# Labelled objects: edge "центр магний"

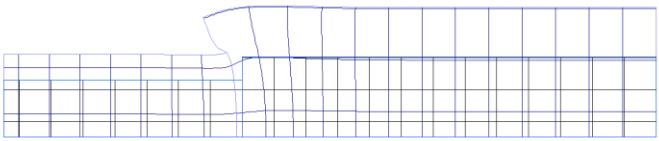
There are (1) objects with this label

Surface force: f_x=0 [N/m2]
Prescribed displacement: d_y = 0 + 0*x + 0*y [in]



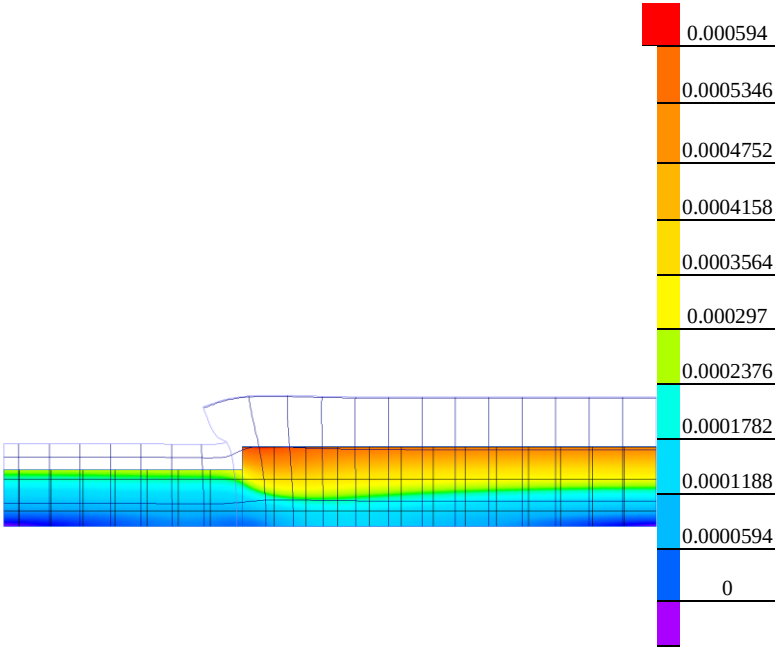
# Results

Field lines



# Results

Color map of Displacement [in]



# Nonlinear dependencies

No non-linear dependencies are used in this problem data