Problem info

Problem type: Stress Analysis
Geometry model class: Plane-Parallel , Plane Stress
Problem database file names:

- Problem: *mems_thermal_stress.pbm*
- Geometry: *Mems_thermal_dc.mod*
- Material Data: *Mems_thermal_stress.dsa*
- Material Data 2 (library): *none*
- Electric circuit: *none*

Results taken from other problems:

- *Temperature Field: Mems_thermal_heat.pbm*

Geometry model

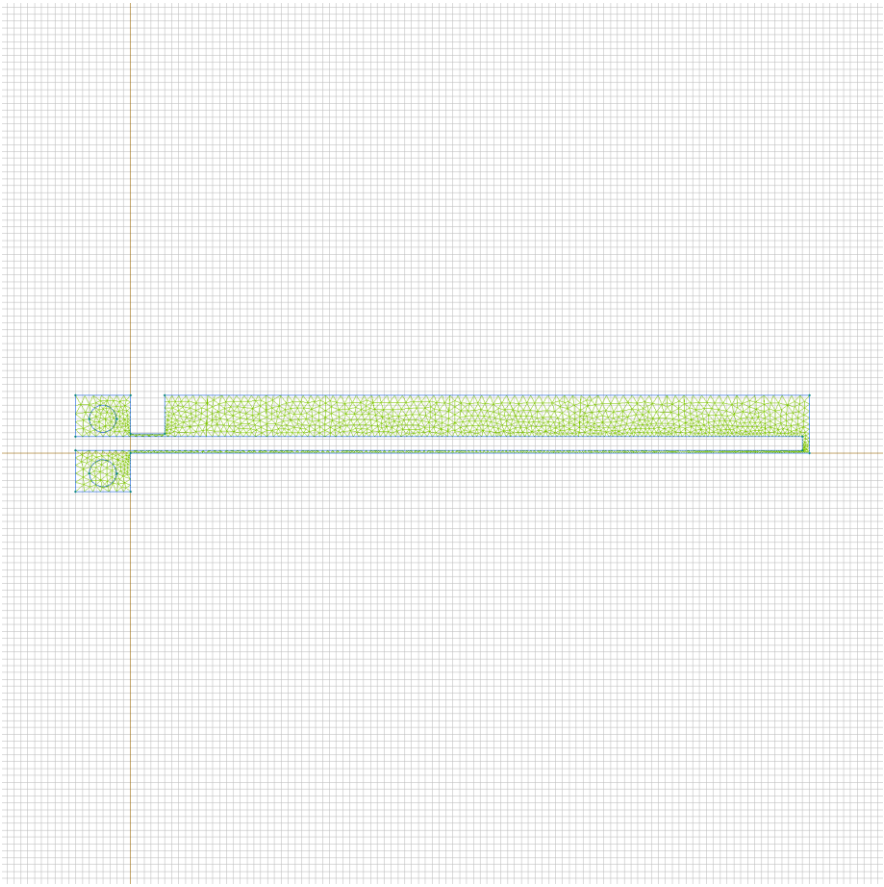


Table 1. Geometry model statistics

	With Label	Total
Blocks	1	3
Edges	3	18
Vertices	0	18

Number of nodes: 1963.

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)

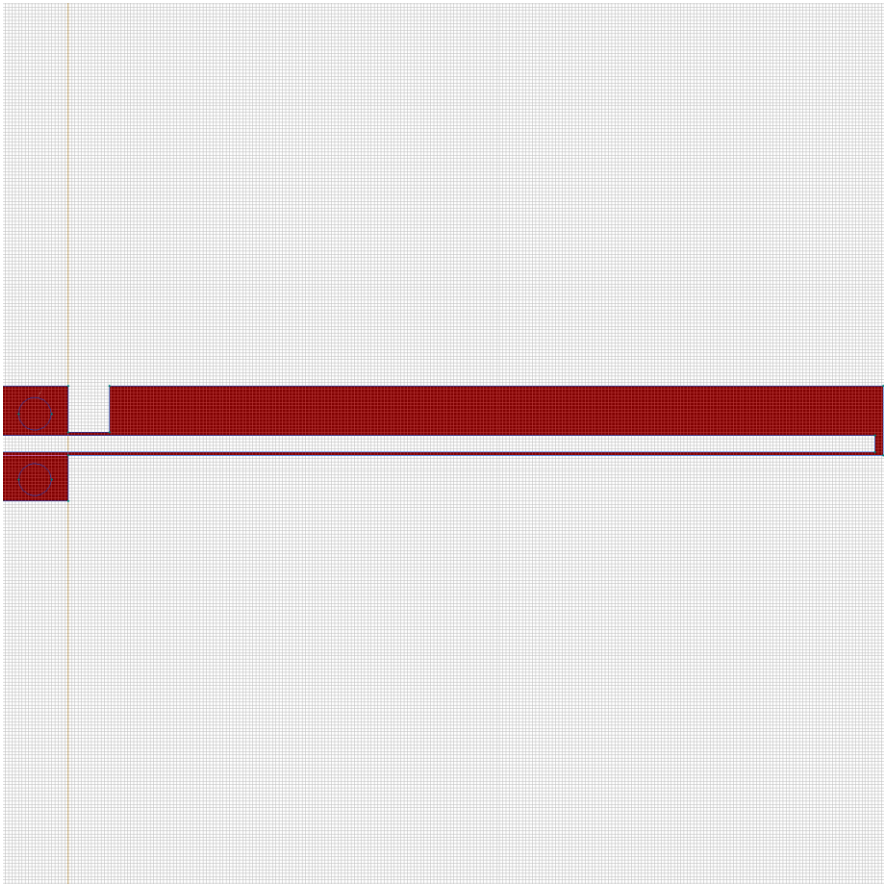
Blocks:	Edges:	Vertices:
• copper •	• convection • V+ • GND •	

Detailed information about each label is listed below.

Labelled objects: block "copper"

There are (3) objects with this label

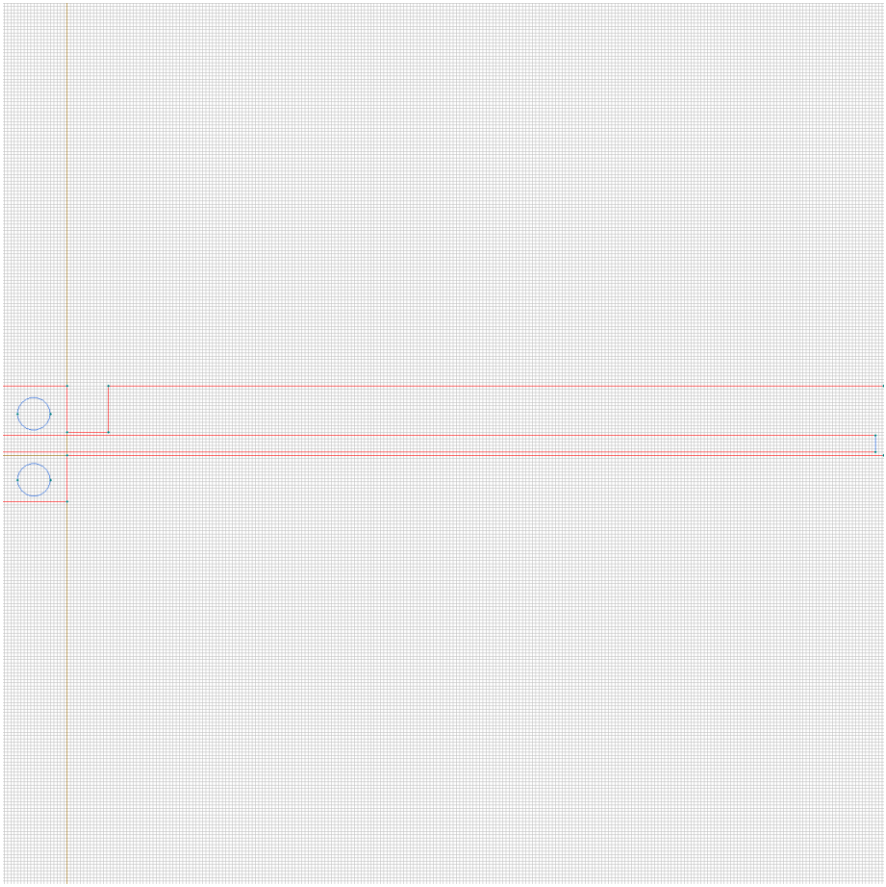
Young's moduli: Ex=169000000000 [N/m2], Ey=169000000000 [N/m2], Ez=169000000000 [N/m2]
Poisson's ratios: v_yx=0.22, v_zx=0.22, v_zy=0.22
Shear modulus: G_xy=69260000000 [N/m2]
Coefficient of thermal expansion:
a_x=2.90000002678426E-06 [1/K],
a_y=2.90000002678426E-06 [1/K],
a_z=2.90000002678426E-06 [1/K]
Difference of temperature: DeltaT=0 [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 "convection"

There are (12) objects with this label

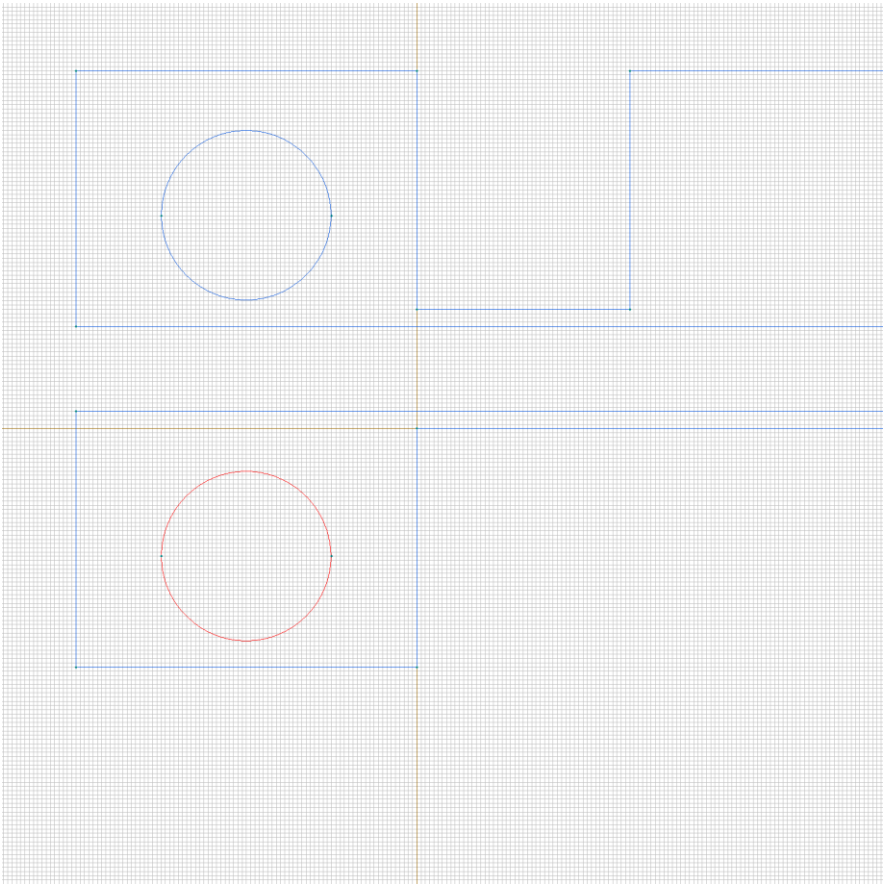
Surface force: f_x=0 [N/m2]
Surface force: f_y=0 [N/m2]



Labelled objects: edge "V+"

There are (2) objects with this label

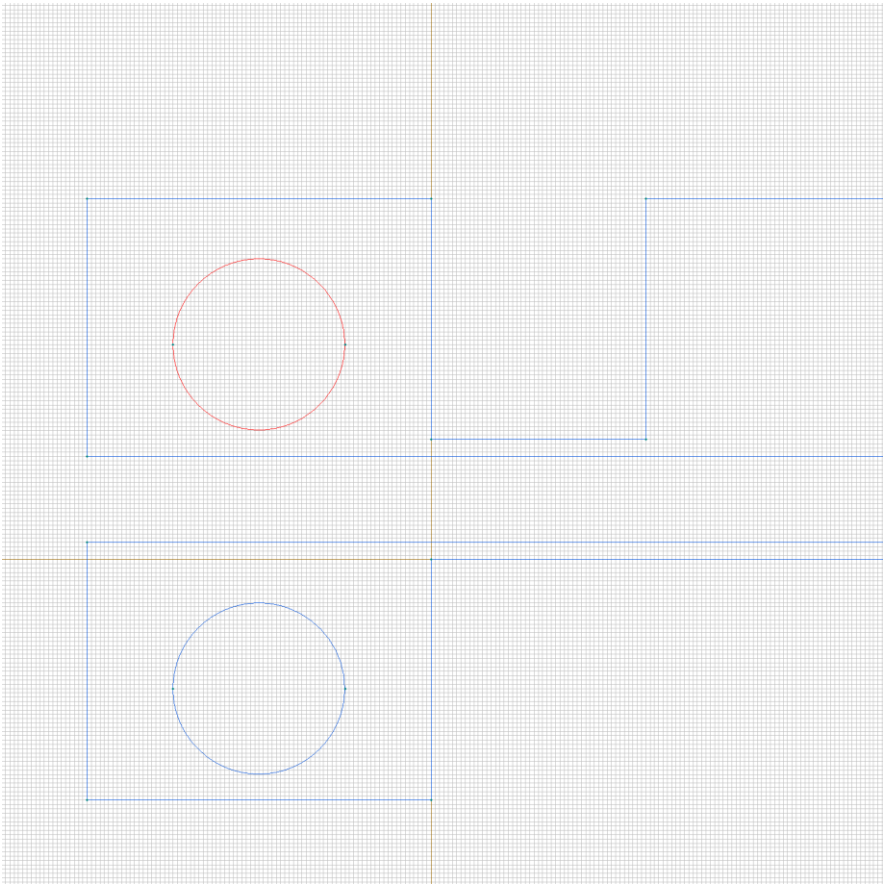
Prescribed displacement: d_x = 0 + 0*x + 0*y [um], d_y = 0 + 0*x + 0*y [um]



Labelled objects: edge "GND"

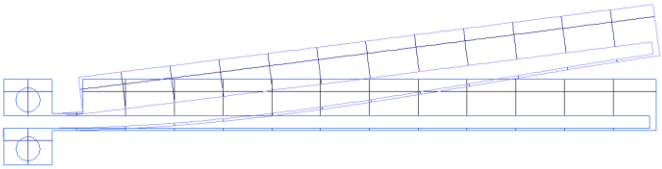
There are (2) objects with this label

Prescribed displacement: d_x = 0 + 0*x + 0*y [um], d_y = 0 + 0*x + 0*y [um]



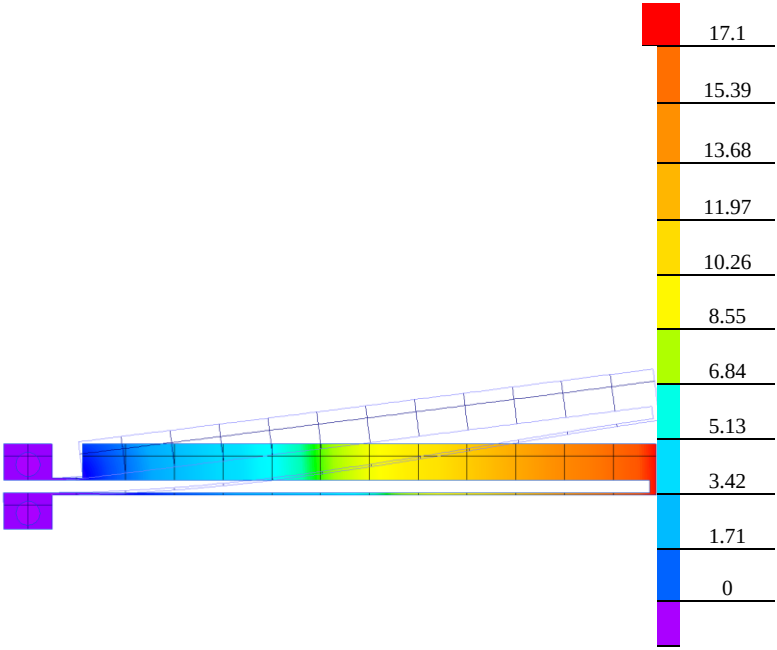
Results

Field lines



Results

Color map of Displacement [um]



Nonlinear dependencies

No non-linear dependencies are used in this problem data