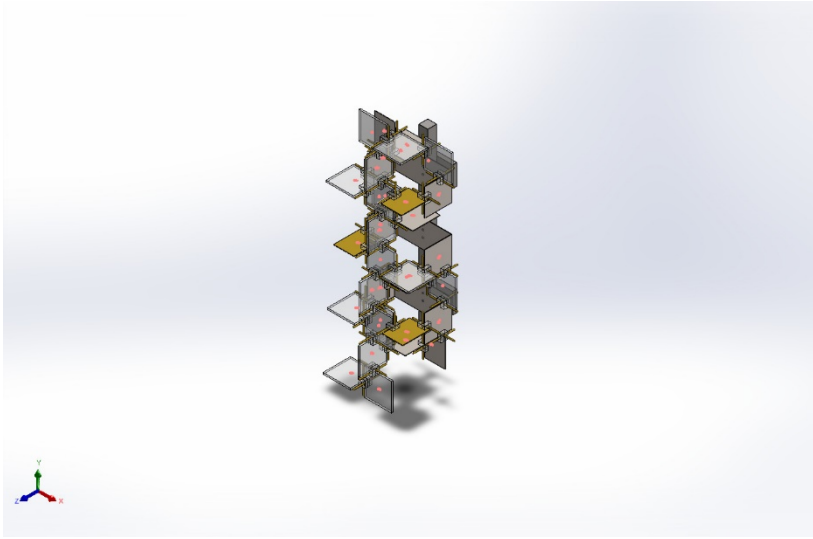


Simulation of Gaetano Sciolari Chandelier

Date: Monday, October 14, 2024
Analysis type: Static

Table of Contents

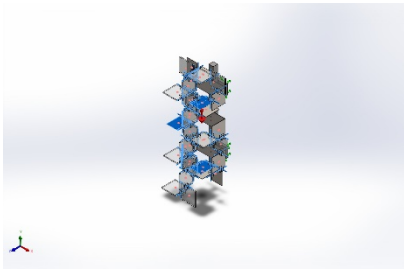
Study Properties

Study name	Static 1
Analysis type	Static
Mesh type	Solid Mesh
Thermal Effect:	On
Thermal option	Include temperature loads
Zero strain temperature	298 Kelvin
Include fluid pressure effects from SOLIDWORKS Flow Simulation	Off
Solver type	Automatic
Inplane Effect:	Off
Soft Spring:	Off
Inertial Relief:	Off
Incompatible bonding options	Automatic
Large displacement	Off
Compute free body forces	On
Friction	Off
Use Adaptive Method:	Off

Units

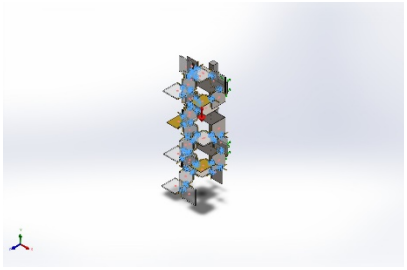
Unit system:	SI (MKS)
Length/Displacement	mm
Temperature	Kelvin
Angular velocity	Rad/sec
Pressure/Stress	N/m^2

Material Properties

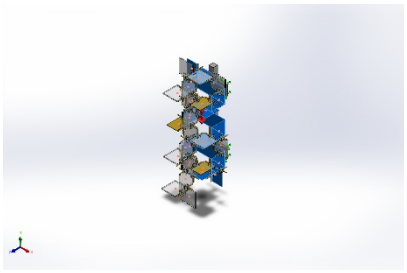
Model Reference	Properties	Components
	**Name:** Brass **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 2.39689e+08 N/m^2 **Tensile strength:** 4.78413e+08 N/m^2 **Elastic modulus:** 1e+11 N/m^2 **Poisson's ratio:** 0.33 **Mass density:** 8,500 kg/m^3 **Shear modulus:** 3.7e+10 N/m^2 **Thermal expansion coefficient:** 1.8e-05 /Kelvin	SolidBody 1(Boss-Extrude1)(brass_pin-10), SolidBody 1(Boss-Extrude1)(brass_pin-11), SolidBody 1(Boss-Extrude1)(brass_pin-12), SolidBody 1(Boss-Extrude1)(brass_pin-13), SolidBody 1(Boss-Extrude1)(brass_pin-14), SolidBody 1(Boss-Extrude1)(brass_pin-15), SolidBody 1(Boss-Extrude1)(brass_pin-16), SolidBody 1(Boss-Extrude1)(brass_pin-17), SolidBody 1(Boss-Extrude1)(brass_pin-18), SolidBody 1(Boss-Extrude1)(brass_pin-19), SolidBody 1(Boss-Extrude1)(brass_pin-2), SolidBody 1(Boss-Extrude1)(brass_pin-20), SolidBody 1(Boss-Extrude1)(brass_pin-21), SolidBody 1(Boss-Extrude1)(brass_pin-22), SolidBody 1(Boss-Extrude1)(brass_pin-23), SolidBody 1(Boss-Extrude1)(brass_pin-24), SolidBody 1(Boss-Extrude1)(brass_pin-25), SolidBody 1(Boss-Extrude1)(brass_pin-26), SolidBody 1(Boss-Extrude1)(brass_pin-27), SolidBody 1(Boss-Extrude1)(brass_pin-28), SolidBody 1(Boss-Extrude1)(brass_pin-29), SolidBody 1(Boss-Extrude1)(brass_pin-3), SolidBody 1(Boss-Extrude1)(brass_pin-30), SolidBody 1(Boss-Extrude1)(brass_pin-31), SolidBody 1(Boss-Extrude1)(brass_pin-32),

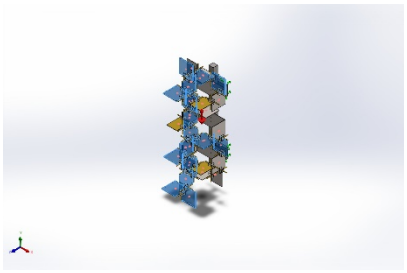
		SolidBody 1(Boss-Extrude1)(brass_pin-33), SolidBody 1(Boss-Extrude1)(brass_pin-34), SolidBody 1(Boss-Extrude1)(brass_pin-35), SolidBody 1(Boss-Extrude1)(brass_pin-36), SolidBody 1(Boss-Extrude1)(brass_pin-37), SolidBody 1(Boss-Extrude1)(brass_pin-38), SolidBody 1(Boss-Extrude1)(brass_pin-39), SolidBody 1(Boss-Extrude1)(brass_pin-4), SolidBody 1(Boss-Extrude1)(brass_pin-40), SolidBody 1(Boss-Extrude1)(brass_pin-41), SolidBody 1(Boss-Extrude1)(brass_pin-43), SolidBody 1(Boss-Extrude1)(brass_pin-44), SolidBody 1(Boss-Extrude1)(brass_pin-45), SolidBody 1(Boss-Extrude1)(brass_pin-46), SolidBody 1(Boss-Extrude1)(brass_pin-47), SolidBody 1(Boss-Extrude1)(brass_pin-48), SolidBody 1(Boss-Extrude1)(brass_pin-49), SolidBody 1(Boss-Extrude1)(brass_pin-50), SolidBody 1(Boss-Extrude1)(brass_pin-51), SolidBody 1(Boss-Extrude1)(brass_pin-52), SolidBody 1(Boss-Extrude1)(brass_pin-53), SolidBody 1(Boss-Extrude1)(brass_pin-54), SolidBody 1(Boss-Extrude1)(brass_pin-55), SolidBody 1(Boss-Extrude1)(brass_pin-56), SolidBody 1(Boss-Extrude1)(brass_pin-57), SolidBody 1(Boss-Extrude1)(brass_pin-58), SolidBody 1(Boss-Extrude1)(brass_pin-59),

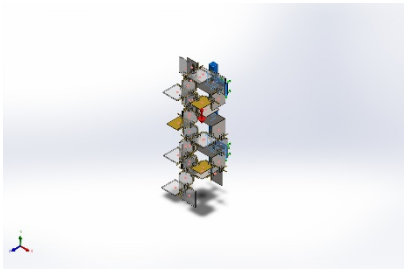
		SolidBody 1(Boss-Extrude1)(brass_pin-6), SolidBody 1(Boss-Extrude1)(brass_pin-60), SolidBody 1(Boss-Extrude1)(brass_pin-61), SolidBody 1(Boss-Extrude1)(brass_pin-62), SolidBody 1(Boss-Extrude1)(brass_pin-63), SolidBody 1(Boss-Extrude1)(brass_pin-64), SolidBody 1(Boss-Extrude1)(brass_pin-65), SolidBody 1(Boss-Extrude1)(brass_pin-66), SolidBody 1(Boss-Extrude1)(brass_pin-67), SolidBody 1(Boss-Extrude1)(brass_pin-68), SolidBody 1(Boss-Extrude1)(brass_pin-69), SolidBody 1(Boss-Extrude1)(brass_pin-7), SolidBody 1(Boss-Extrude1)(brass_pin-70), SolidBody 1(Boss-Extrude1)(brass_pin-71), SolidBody 1(Boss-Extrude1)(brass_pin-73), SolidBody 1(Boss-Extrude1)(brass_pin-74), SolidBody 1(Boss-Extrude1)(brass_pin-75), SolidBody 1(Boss-Extrude1)(brass_pin-76), SolidBody 1(Boss-Extrude1)(brass_pin-77), SolidBody 1(Boss-Extrude1)(brass_pin-78), SolidBody 1(Boss-Extrude1)(brass_pin-79), SolidBody 1(Boss-Extrude1)(brass_pin-80), SolidBody 1(Boss-Extrude1)(brass_pin-81), SolidBody 1(Boss-Extrude1)(brass_pin-82), SolidBody 1(Boss-Extrude1)(brass_pin-83), SolidBody 1(Boss-Extrude1)(brass_pin-84), SolidBody 1(Boss-Extrude1)(brass_pin-85),

		SolidBody 1(Boss-Extrude1)(brass_pin-9), SolidBody 1(Boss-Extrude1)(plate-13-1/brass_metal-1), SolidBody 1(Boss-Extrude1)(plate-16-2/brass_metal-1), SolidBody 1(Boss-Extrude1)(plate-18-1/brass_metal-1)
Curve Data:N/A		
	**Name:** Acrylic (Medium-high impact) **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 4.5e+07 N/m^2 **Tensile strength:** 7.3e+07 N/m^2 **Elastic modulus:** 3e+09 N/m^2 **Poisson's ratio:** 0.35 **Mass density:** 1,200 kg/m^3 **Shear modulus:** 8.9e+08 N/m^2 **Thermal expansion coefficient:** 5.2e-05 /Kelvin	SolidBody 1(Cut-Extrude4)(glass_glass_cube-10), SolidBody 1(Cut-Extrude4)(glass_glass_cube-11), SolidBody 1(Cut-Extrude4)(glass_glass_cube-12), SolidBody 1(Cut-Extrude4)(glass_glass_cube-13), SolidBody 1(Cut-Extrude4)(glass_glass_cube-14), SolidBody 1(Cut-Extrude4)(glass_glass_cube-15), SolidBody 1(Cut-Extrude4)(glass_glass_cube-2), SolidBody 1(Cut-Extrude4)(glass_glass_cube-3), SolidBody 1(Cut-Extrude4)(glass_glass_cube-4), SolidBody 1(Cut-Extrude4)(glass_glass_cube-5), SolidBody 1(Cut-Extrude4)(glass_glass_cube-6), SolidBody 1(Cut-Extrude4)(glass_glass_cube-8), SolidBody 1(Cut-Extrude4)(glass_glass_cube-9), SolidBody 1(Cut-Extrude4)(glass_metal_cube-1),

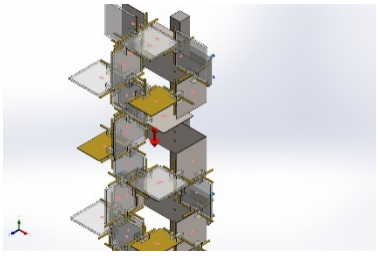
		SolidBody 1(Cut-Extrude4)(glass_metal_cube-11), SolidBody 1(Cut-Extrude4)(glass_metal_cube-12), SolidBody 1(Cut-Extrude4)(glass_metal_cube-14), SolidBody 1(Cut-Extrude4)(glass_metal_cube-15), SolidBody 1(Cut-Extrude4)(glass_metal_cube-16), SolidBody 1(Cut-Extrude4)(glass_metal_cube-17), SolidBody 1(Cut-Extrude4)(glass_metal_cube-18), SolidBody 1(Cut-Extrude4)(glass_metal_cube-19), SolidBody 1(Cut-Extrude4)(glass_metal_cube-22), SolidBody 1(Cut-Extrude4)(glass_metal_cube-23), SolidBody 1(Cut-Extrude4)(glass_metal_cube-24), SolidBody 1(Cut-Extrude4)(glass_metal_cube-25), SolidBody 1(Cut-Extrude4)(glass_metal_cube-3), SolidBody 1(Cut-Extrude4)(glass_metal_cube-4), SolidBody 1(Cut-Extrude4)(glass_metal_cube-5), SolidBody 1(Cut-Extrude4)(glass_metal_cube-6), SolidBody 1(Cut-Extrude4)(glass_metal_cube-7), SolidBody 1(Cut-Extrude4)(glass_metal_cube-8),

		SolidBody 1(Cut-Extrude4)(glass_metal_cube-9), SolidBody 1(Cut-Extrude4)(metal_metal_cube-2), SolidBody 1(Cut-Extrude4)(metal_metal_cube-4), SolidBody 1(Cut-Extrude4)(metal_metal_cube-5), SolidBody 1(Cut-Extrude4)(metal_metal_cube-6), SolidBody 1(Cut-Extrude4)(metal_metal_cube-7), SolidBody 1(Cut-Extrude4)(metal_metal_cube-8), SolidBody 1(Cut-Extrude4)(metal_metal_cube-9)
Curve Data:N/A		
	**Name:** 201 Annealed Stainless Steel (SS) **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 2.92e+08 N/m^2 **Tensile strength:** 6.85e+08 N/m^2 **Elastic modulus:** 2.07e+11 N/m^2 **Poisson's ratio:** 0.27 **Mass density:** 7,860 kg/m^3 **Thermal expansion coefficient:** 1.7e-05 /Kelvin	SolidBody 1(Boss-Extrude1)(lower_bracket-1/mirrored_stainless_steel_U-bracket-4), SolidBody 1(Boss-Extrude1)(middle_bracket-1/mirrored_stainless_steel_U-bracket-3), SolidBody 1(Boss-Extrude1)(plate-12-6/mirrored_stainless_steel_4-4-1), SolidBody 1(Boss-Extrude1)(plate-15-1/mirrored_stainless_steel_4-4-1), SolidBody 1(Boss-Extrude1)(plate-20-2/mirrored_stainless_steel_4-4-1), SolidBody 1(Boss-Extrude1)(plate-34-5/mirrored_stainless_steel_3-4-1), SolidBody 1(Boss-Extrude1)(plate-35-6/mirrored_stainless_steel_3-4-1),

		SolidBody 1(Boss-Extrude1)(plate-7-3/mirrored_stainless_steel_4-4-1), SolidBody 1(Boss-Extrude1)(upper_bracket-1/mirrored_stainless_steel_U-bracket-23-24-1)
Curve Data:N/A		
	**Name:** Glass **Model type:** Linear Elastic Isotropic **Default failure criterion:** Mohr-Coulomb Stress **Tensile strength:** 4e+07 N/m^2 **Compressive strength:** 1e+09 N/m^2 **Elastic modulus:** 6.8935e+10 N/m^2 **Poisson's ratio:** 0.23 **Mass density:** 2,457.6 kg/m^3 **Shear modulus:** 2.8022e+10 N/m^2 **Thermal expansion coefficient:** 9e-06 /Kelvin	SolidBody 1(Boss-Extrude1)(plate-1-1/gray_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-10-1/gray_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-11-1/gray_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-14-1/bronze_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-17-1/gray_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-19-1/bronze_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-2-1/bronze_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-21-1/gray_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-22-1/gray_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-25-1/bronze_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-28-1/bronze_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-3-1/bronze_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-31-

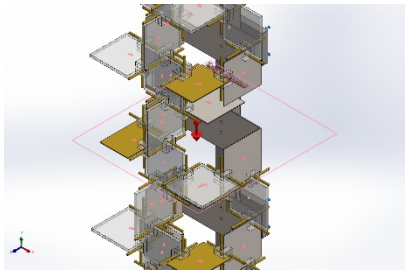
		1/gray_reflective_glass_transparent-1), SolidBody 1(Boss-Extrude1)(plate-4-1/gray_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-5-1/gray_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-6-1/bronze_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-8-1/bronze_mirrored_glass-1), SolidBody 1(Boss-Extrude1)(plate-9-1/bronze_mirrored_glass-1)
Curve Data:N/A		
	**Name:** Plain Carbon Steel **Model type:** Linear Elastic Isotropic **Default failure criterion:** Max von Mises Stress **Yield strength:** 2.20594e+08 N/m^2 **Tensile strength:** 3.99826e+08 N/m^2 **Elastic modulus:** 2.1e+11 N/m^2 **Poisson's ratio:** 0.28 **Mass density:** 7,800 kg/m^3 **Shear modulus:** 7.9e+10 N/m^2 **Thermal expansion coefficient:** 1.3e-05 /Kelvin	SolidBody 1(Cut-Extrude1)(structure-2)
Curve Data:N/A		

Loads and Fixtures

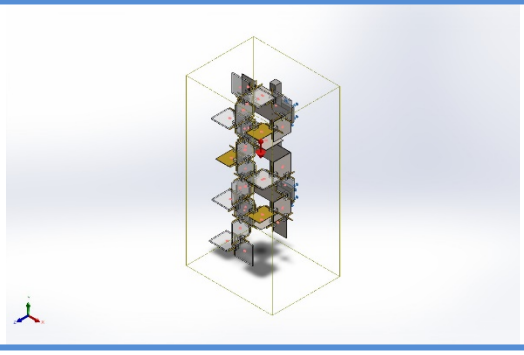
Fixture name	Fixture Image	Fixture Details
Fixed-1		**Entities:** 2 face(s) **Type:** Fixed Geometry

Resultant Forces

Components	X	Y	Z	Resultant
Reaction force(N)	-30	136.766	-40	145.62
Reaction Moment(N.m)	0	0	0	0

Load name	Load Image	Load Details
Gravity-1		**Reference:** Top Plane **Values:** 0 0 -9.81 **Units:** m/s^2

Interaction Information

Interaction	Interaction Image	Interaction Properties
Global Interaction		**Type:** Bonded **Components:** 1 component(s) **Options:** Independent mesh

Mesh information

Mesh type	Solid Mesh
Mesher Used:	Blended curvature-based mesh
Jacobian points for High quality mesh	16 Points
Maximum element size	2.51615 in
Minimum element size	0.125808 in
Mesh Quality	High
Remesh failed parts independently	Off
Reuse mesh for identical parts in an assembly (Blended curvature-based mesher only)	Off

Mesh information - Details

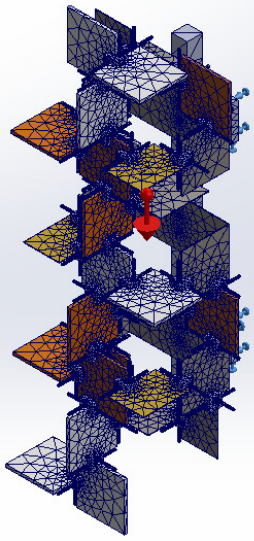
Total Nodes	244675
Total Elements	122775
Maximum Aspect Ratio	31.29
% of elements with Aspect Ratio < 3	87.7
Percentage of elements with Aspect Ratio > 10	1.06
Percentage of distorted elements	0
Time to complete mesh(hh;mm;ss):	00:00:49

Mesh Quality Plots

Name	Type	Min	Max
Quality1	Mesh	-	-

Name	Type	Min	Max

Model name: gaetano_sciolari
Study name: Static 1(-Default-)
Plot type: Mesh Quality1



gaetano_sciolari-Static 1-Quality-Quality1

Resultant Forces

Reaction forces

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N	-30	136.766	-40	145.62

Reaction Moments

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N.m	0	0	0	0

Free body forces

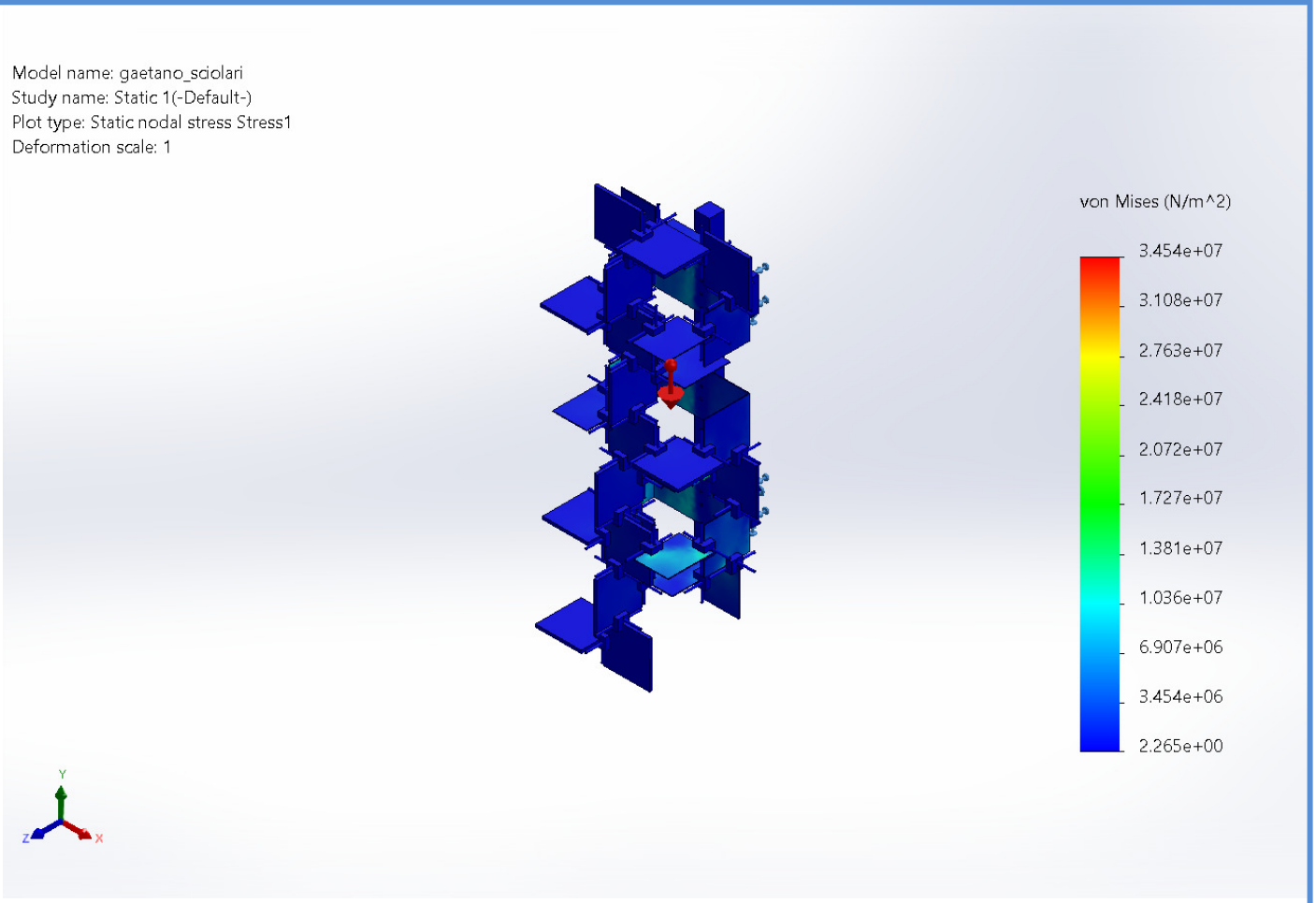
Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N	-0.000380188	106.829	-19.9991	108.685

Free body moments

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N.m	0	0	0	1e-33

Study Results

Name	Type	Min	Max
Stress1	VON: von Mises Stress	2.265e+00N/m^2 Node: 39292	3.454e+07N/m^2 Node: 54370

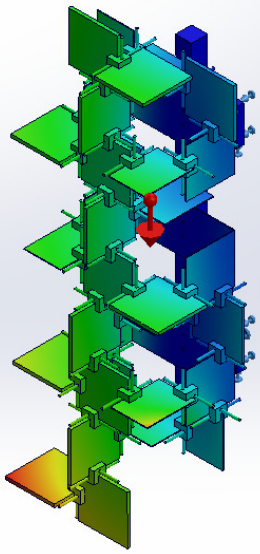


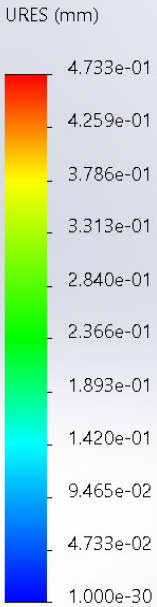
gaetano_sciolari-Static 1-Stress-Stress1

Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.000e+00mm Node: 217770	4.733e-01mm Node: 193988

Name	Type	Min	Max

Model name: gaetano_sciolari
Study name: Static 1(-Default-)
Plot type: Static displacement Displacement1
Deformation scale: 1

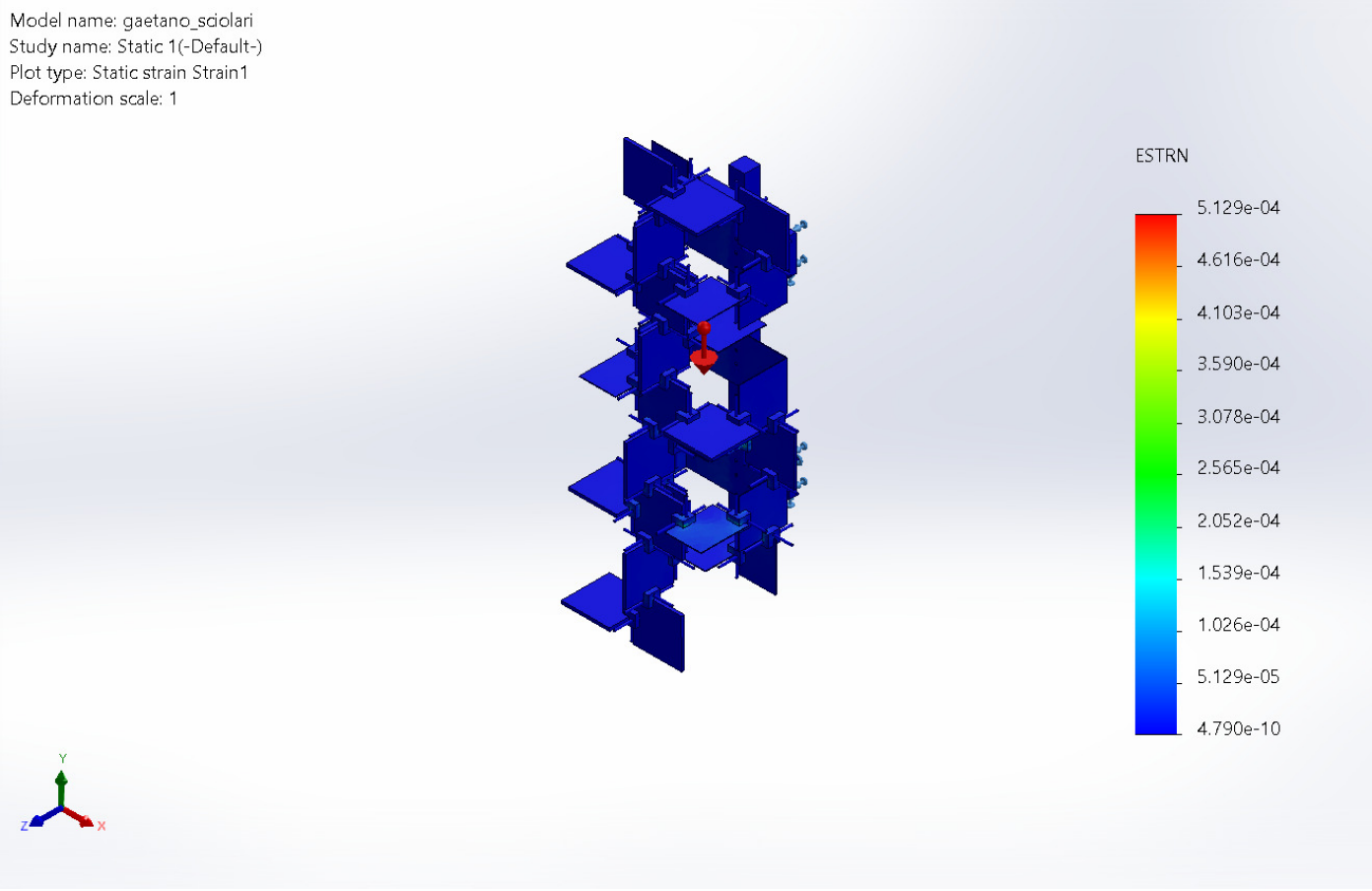




gaetano_sciolari-Static 1-Displacement-Displacement1

Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	4.790e-10 Element: 335	5.129e-04 Element: 60702

Name	Type	Min	Max

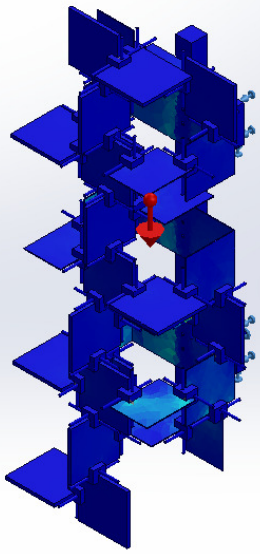


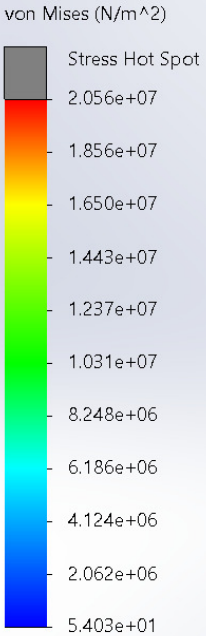
gaetano_sciolari-Static 1-Strain-Strain1

Name	Type	Min	Max
Stress Hot Spot1	VON: von Mises Stress	5.403e+01N/m^2 Element: 335	2.199e+07N/m^2 Element: 25474

Name	Type	Min	Max

Model name: gaetano_sciolari
Study name: Static 1(-Default-)
Plot type: Static element stress Stress Hot Spot1
Sensitivity Factor : 25





gaetano_sciolari-Static 1-Stress-Stress Hot Spot1