Ef4

Date	Apr 22, 2013 7:06:15 PM

Contents

1. Model 1 (mod1)

1.1. Definitions

1.1.1. Coordinate Systems

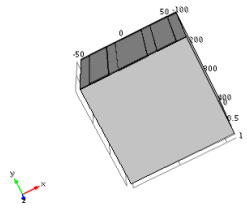
Boundary System 1

Coordinate system type	Boundary system
Identifier	sys1

Settings

Name	Value
Coordinate names	{t1, t2, n}
Create first tangent direction from	Global Cartesian

1.2. Geometry 1



Geometry

units

Length unit	µm
Angular unit	deg

Geometry statistics

Property	Value
Space dimension	3
Number of domains	10
Number of boundaries	57
Number of edges	102
Number of vertices	56

1.2.1. Work Plane 1 (wp1)

Settings

Name	Value
Create selections	On

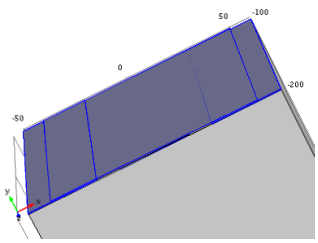
1.2.2. Extrude 1 (ext1)

Settings

Name	Value
Create selections	On
Work plane	Work Plane 1
Keep input objects	On
Distances	1
Scales	{1, 1}
Displacements	{0, 0}
Twist_angles	0

1.3. Materials

1.3.1. Au



Au

Selection

Geometric entity level	Domain
Selection	Domains 3-5, 7, 10

Material parameters

Name	Value	Unit
Density	19300[kg/m^3]	kg/m^3
Young's modulus	70e9[Pa]	Pa
Poisson's ratio	0.44	1

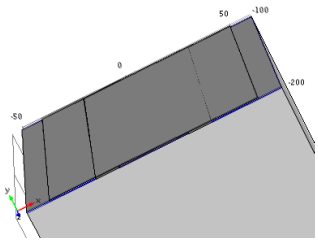
Basic Settings

Description	Value
Electrical conductivity	{{45.6e6[S/m], 0, 0}, {0, 45.6e6[S/m], 0}, {0, 0, 45.6e6[S/m]}}
Coefficient of thermal expansion	{{14.2e-6[1/K], 0, 0}, {0, 14.2e-6[1/K], 0}, {0, 0, 14.2e-6[1/K]}}
Heat capacity at constant pressure	129[J/(kg*K)]
Density	19300[kg/m^3]
Thermal conductivity	{{317[W/(m*K)], 0, 0}, {0, 317[W/(m*K)], 0}, {0, 0, 317[W/(m*K)]}}

Young's modulus and Poisson's ratio Settings

Description	Value
Young's modulus	70e9[Pa]
Poisson's ratio	0.44

1.3.2. Cr



Cr

Selection

Geometric entity level	Domain
Selection	Domains 2, 6, 9

Material parameters

Name	Value	Unit
Density	7150[kg/m^3]	kg/m^3
Young's modulus	279e9[Pa]	Pa
Poisson's ratio	0.21	1

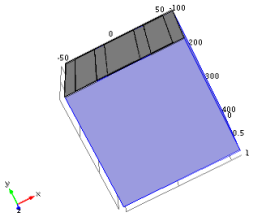
Basic Settings

Description	Value
Electrical conductivity	{{7.9e6[S/m], 0, 0}, {0, 7.9e6[S/m], 0}, {0, 0, 7.9e6[S/m]}}
Coefficient of thermal expansion	{{4.90e-6[1/K], 0, 0}, {0, 4.90e-6[1/K], 0}, {0, 0, 4.90e-6[1/K]}}
Heat capacity at constant pressure	448[J/(kg*K)]
Density	7150[kg/m^3]
Thermal conductivity	{{93.7[W/(m*K)], 0, 0}, {0, 93.7[W/(m*K)], 0}, {0, 0, 93.7[W/(m*K)]}}

Young's modulus and Poisson's ratio Settings

Description	Value
Young's modulus	279e9[Pa]
Poisson's ratio	0.21

1.3.3. Al2O3



Al2O3

Selection

Geometric entity level	Domain
Selection	Domain 1

Material parameters

Name	Value	Unit
Density	3965[kg/m^3]	kg/m^3
Young's modulus	400e9[Pa]	Pa
Poisson's ratio	0.22	1

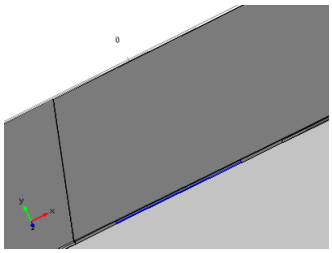
Basic Settings

Description	Value
Electrical conductivity	{{0[S/m], 0, 0}, {0, 0[S/m], 0}, {0, 0, 0[S/m]}}
Coefficient of thermal expansion	{{6.5e-6[1/K], 0, 0}, {0, 6.5e-6[1/K], 0}, {0, 0, 6.5e-6[1/K]}}
Heat capacity at constant pressure	730[J/(kg*K)]
Relative permittivity	{{9.9, 0, 0}, {0, 9.9, 0}, {0, 0, 9.9}}
Density	3965[kg/m^3]
Thermal conductivity	{{35[W/(m*K)], 0, 0}, {0, 35[W/(m*K)], 0}, {0, 0, 35[W/(m*K)]}}

Young's modulus and Poisson's ratio Settings

Description	Value
Young's modulus	400e9[Pa]
Poisson's ratio	0.22

1.3.4. Si3N4



Si3N4

Selection

Geometric entity level	Domain
Selection	Domain 8

Material parameters

Name	Value	Unit
Density	3100[kg/m^3]	kg/m^3
Young's modulus	250e9[Pa]	Pa
Poisson's ratio	0.23	1

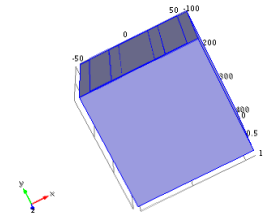
Basic Settings

Description	Value
Electrical conductivity	{{0[S/m], 0, 0}, {0, 0[S/m], 0}, {0, 0, 0[S/m]}}
Coefficient of thermal expansion	{{2.3e-6[1/K], 0, 0}, {0, 2.3e-6[1/K], 0}, {0, 0, 2.3e-6[1/K]}}
Heat capacity at constant pressure	700[J/(kg*K)]
Relative permittivity	{{9.7, 0, 0}, {0, 9.7, 0}, {0, 0, 9.7}}
Density	3100[kg/m^3]
Thermal conductivity	{{20[W/(m*K)], 0, 0}, {0, 20[W/(m*K)], 0}, {0, 0, 20[W/(m*K)]}}

Young's modulus and Poisson's ratio Settings

Description	Value
Young's modulus	250e9[Pa]
Poisson's ratio	0.23

1.4. Solid Mechanics (solid)



Solid Mechanics

Selection

Geometric entity level	Domain
Selection	Domains 1-10

Equations

$$-\rho\omega^2\mathbf{u} - \nabla\cdot\sigma = \mathbf{F_v}, \quad -i\omega = \lambda$$

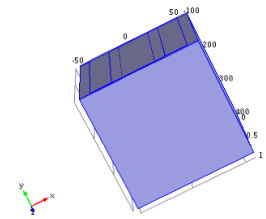
Settings

Description	Value
Show equation assuming	std1/eig

Used products

COMSOL Multiphysics

1.4.1. Linear Elastic Material Model 1



Linear Elastic Material Model 1

Selection

Geometric entity level	Domain
Selection	Domains 1-10

Equations

$$-\nabla\cdot\sigma = \mathbf{F_v}, \quad \sigma = \mathbf{s}$$

$$\boldsymbol{s} - \boldsymbol{s}_0 = \underline{\underline{C}} : (\varepsilon - \varepsilon_0 - \varepsilon_{inel})$$

$$\varepsilon = \frac{1}{2}\left[(\nabla \mathbf{u})^T + \nabla \mathbf{u}\right]$$

Properties from material

Property	Material	Property group
Young's modulus	Au	Young's modulus and Poisson's ratio
Poisson's ratio	Au	Young's modulus and Poisson's ratio
Density	Au	Basic
Young's modulus	Cr	Young's modulus and Poisson's ratio
Poisson's ratio	Cr	Young's modulus and Poisson's ratio
Density	Cr	Basic
Young's modulus	Al2O3	Young's modulus and Poisson's ratio
Poisson's ratio	Al2O3	Young's modulus and Poisson's ratio
Density	Al2O3	Basic
Young's modulus	Si3N4	Young's modulus and Poisson's ratio
Poisson's ratio	Si3N4	Young's modulus and Poisson's ratio
Density	Si3N4	Basic

Variables

Name	Expression	
uXt	root.mod1.uXTIME	1/s
uYt	root.mod1.uYTIME	1/s
uZt	root.mod1.uZTIME	1/s
uXtt	root.mod1.uXTIMETIME	1/s^
uYtt	root.mod1.uYTIMETIME	1/s^
uZtt	root.mod1.uZTIMETIME	1/s^
vXt	root.mod1.vXTIME	1/s
vYt	root.mod1.vYTIME	1/s
vZt	root.mod1.vZTIME	1/s
vXtt	root.mod1.vXTIMETIME	1/s^
vYtt	root.mod1.vYTIMETIME	1/s^
vZtt	root.mod1.vZTIMETIME	1/s^
wXt	root.mod1.wXTIME	1/s
wYt	root.mod1.wYTIME	1/s
wZt	root.mod1.wZTIME	1/s
wXtt	root.mod1.wXTIMETIME	1/s^
wYtt	root.mod1.wYTIMETIME	1/s^
wZtt	root.mod1.wZTIMETIME	1/s^
ut	root.mod1.uTIME	m/s
vt	root.mod1.vTIME	m/s
wt	root.mod1.wTIME	m/s
utt	root.mod1.uTIMETIME	m/s´

vtt	root.mod1.vTIMETIME	m/s²
wtt	root.mod1.wTIMETIME	m/s²
solid.E	material.parameter.E	Pa
solid.nu	material.parameter.nu	1
solid.K	solid.E/(3-6*solid.nu)	Pa
solid.G	0.5*solid.E/(1+solid.nu)	Pa
solid.lambLame	solid.E*solid.nu/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.muLame	0.5*solid.E/(1+solid.nu)	Pa
solid.cp	sqrt(solid.E*(1+solid.nu/(1-2*solid.nu))/((1+solid.nu)*solid.rho))	m/s
solid.cs	sqrt(0.5*solid.E/((1+solid.nu)*solid.rho))	m/s
solid.Eequ	solid.E	Pa
solid.D11	(1-solid.nu)*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D21	solid.nu*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D31	solid.nu*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D41	0	Pa
solid.D51	0	Pa
solid.D61	0	Pa
solid.D12	solid.nu*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D22	(1-solid.nu)*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D32	solid.nu*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D42	0	Pa
solid.D52	0	Pa
solid.D62	0	Pa
solid.D13	solid.nu*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D23	solid.nu*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D33	(1-solid.nu)*solid.E/((1+solid.nu)*(1-2*solid.nu))	Pa
solid.D43	0	Pa
solid.D53	0	Pa
solid.D63	0	Pa
solid.D14	0	Pa
solid.D24	0	Pa
solid.D34	0	Pa
solid.D44	0.5*solid.E/(1+solid.nu)	Pa
solid.D54	0	Pa
solid.D64	0	Pa
solid.D15	0	Pa
solid.D25	0	Pa

solid.D35	0	Pa
solid.D45	0	Pa
solid.D55	0.5*solid.E/(1+solid.nu)	Pa
solid.D65	0	Pa
solid.D16	0	Pa
solid.D26	0	Pa
solid.D36	0	Pa
solid.D46	0	Pa
solid.D56	0	Pa
solid.D66	0.5*solid.E/(1+solid.nu)	Pa
solid.rho	material.parameter.rho	kg/m
solid.FdxX	1+uX	1
solid.FdyX	vX	1
solid.FdzX	wX	1
solid.FdxY	uY	1
solid.FdyY	1+vY	1
solid.FdzY	wY	1
solid.FdxZ	uZ	1
solid.FdyZ	vZ	1
solid.FdzZ	1+wZ	1
solid.eX	uX	1
solid.eXY	0.5*(uY+vX)	1
solid.eXZ	0.5*(uZ+wX)	1
solid.eY	vY	1
solid.eYZ	0.5*(vZ+wY)	1
solid.eZ	wZ	1
solid.el11	uX	1
solid.el12	0.5*(uY+vX)	1
solid.el13	0.5*(uZ+wX)	1
solid.el22	vY	1
solid.el23	0.5*(vZ+wY)	1
solid.el33	wZ	1
solid.eel11	uX-solid.eil11-solid.eiel11	1

solid.eel12	0.5*(uY+vX)-solid.eil12-solid.eiel12	1
solid.eel13	0.5*(uZ+wX)-solid.eil13-solid.eiel13	1
solid.eel22	vY-solid.eil22-solid.eiel22	1
solid.eel23	0.5*(vZ+wY)-solid.eil23-solid.eiel23	1
solid.eel33	wZ-solid.eil33-solid.eiel33	1
solid.eil11	0	1
solid.eil12	0	1
solid.eil13	0	1
solid.eil22	0	1
solid.eil23	0	1
solid.eil33	0	1
solid.eiel11	0	1
solid.eiel12	0	1
solid.eiel13	0	1
solid.eiel22	0	1
solid.eiel23	0	1
solid.eiel33	0	1
solid.evol	uX+vY+wZ	1
solid.J	solid.FdxX*solid.FdyY*solid.FdzZ+solid.FdxY*solid.FdyZ*solid.FdzX+solid.FdxZ*solid.FdyX*solid.FdzY-solid.FdxX*solid.FdyZ*solid.FdzY-solid.FdxY*solid.FdyX*solid.FdzZ-solid.FdxZ*solid.FdyY*solid.FdzX	1
solid.Sl11	solid.D11*solid.eel11+2*solid.D14*solid.eel12+solid.D16*solid.eel13+solid.D12*solid.eel22+2*solid.D15*solid.eel23+solid.D16*solid.eel13+solid.D13*solid.eel33+solid.Sil11	N/m
solid.Sl12	solid.D14*solid.eel11+2*solid.D44*solid.eel12+solid.D46*solid.eel13+solid.D24*solid.eel22+2*solid.D45*solid.eel23+solid.D46*solid.eel13+solid.D34*solid.eel33+solid.Sil12	N/m
solid.Sl13	solid.D16*solid.eel11+2*solid.D46*solid.eel12+2*solid.D66*solid.eel13+solid.D26*solid.eel22+2*solid.D56*solid.eel23+solid.D36*solid.eel33+solid.Sil13	N/m

solid.Sl22	solid.D12*solid.eel11+2*solid.D24*solid.eel12+solid.D26*solid.eel13+solid.D22*solid.eel22+2*solid.D25*solid.eel23+solid.D26*solid.eel13+solid.D23*solid.eel33+solid.Sil22	N/m
solid.Sl23	solid.D15*solid.eel11+solid.D45*solid.eel12+solid.D56*solid.eel13+solid.D45*solid.eel12+solid.D25*solid.eel22+2*solid.D55*solid.eel23+solid.D56*solid.eel13+solid.D35*solid.eel33+solid.Sil23	N/m
solid.Sl33	solid.D13*solid.eel11+2*solid.D34*solid.eel12+solid.D36*solid.eel13+solid.D23*solid.eel22+2*solid.D35*solid.eel23+solid.D36*solid.eel13+solid.D33*solid.eel33+solid.Sil33	N/m
solid.pp	-(solid.Sl11+solid.Sl22+solid.Sl33)/3	Pa
solid.qq	1/solid.K	1/Pa
solid.Sil11	0	N/m
solid.Sil12	0	N/m
solid.Sil13	0	N/m
solid.Sil22	0	N/m
solid.Sil23	0	N/m
solid.Sil33	0	N/m
solid.Ws	0.5*(solid.Sl11*solid.eel11+2*solid.Sl12*solid.eel12+solid.Sl13*solid.eel13+solid.Sl22*solid.eel22+2*solid.Sl23*solid.eel23+solid.Sl13*solid.eel13+solid.Sl33*solid.eel33)	J/m^
solid.disp	sqrt(real(u)^2+real(v)^2+real(w)^2)	m
solid.u_ttX	d(root.mod1.uTIME,TIME)	m/s´
solid.u_ttY	d(root.mod1.vTIME,TIME)	m/s´
solid.u_ttZ	d(root.mod1.wTIME,TIME)	m/s´
solid.u_tX	root.mod1.uTIME	m/s
solid.u_tY	root.mod1.vTIME	m/s
solid.u_tZ	root.mod1.wTIME	m/s
solid.SX	solid.Sl11	N/m
solid.SXY	solid.Sl12	N/m
solid.SXZ	solid.Sl13	N/m
solid.SY	solid.Sl22	N/m
solid.SYZ	solid.Sl23	N/m
solid.SZ	solid.Sl33	N/m
solid.PxX	solid.FdxX*solid.SX+solid.FdxY*solid.SXY+solid.FdxZ*solid.SXZ	N/m
solid.PyX	solid.FdyX*solid.SX+solid.FdyY*solid.SXY+solid.FdyZ*solid.SXZ	N/m
solid.PzX	solid.FdzX*solid.SX+solid.FdzY*solid.SXY+solid.FdzZ*solid.SXZ	N/m

solid.PxY	solid.FdxX*solid.SXY+solid.FdxY*solid.SY+solid.FdxZ*solid.SYZ	N/m
solid.PyY	solid.FdyX*solid.SXY+solid.FdyY*solid.SY+solid.FdyZ*solid.SYZ	N/m
solid.PzY	solid.FdzX*solid.SXY+solid.FdzY*solid.SY+solid.FdzZ*solid.SYZ	N/m
solid.PxZ	solid.FdxX*solid.SXZ+solid.FdxY*solid.SYZ+solid.FdxZ*solid.SZ	N/m
solid.PyZ	solid.FdyX*solid.SXZ+solid.FdyY*solid.SYZ+solid.FdyZ*solid.SZ	N/m
solid.PzZ	solid.FdzX*solid.SXZ+solid.FdzY*solid.SYZ+solid.FdzZ*solid.SZ	N/m
solid.sx	solid.SX	N/m
solid.sxy	solid.SXY	N/m
solid.sxz	solid.SXZ	N/m
solid.sy	solid.SY	N/m
solid.syz	solid.SYZ	N/m
solid.sz	solid.SZ	N/m
solid.sdevx	solid.sx-(solid.sx+solid.sy+solid.sz)/3	N/m
solid.sdevxy	solid.sxy	N/m
solid.sdevxz	solid.sxz	N/m
solid.sdevy	solid.sy-(solid.sx+solid.sy+solid.sz)/3	N/m
solid.sdevyz	solid.syz	N/m
solid.sdevz	solid.sz-(solid.sx+solid.sy+solid.sz)/3	N/m
solid.SdevX	solid.SX-(solid.SX+solid.SY+solid.SZ)/3	N/m
solid.SdevXY	solid.SXY	N/m
solid.SdevXZ	solid.SXZ	N/m
solid.SdevY	solid.SY-(solid.SX+solid.SY+solid.SZ)/3	N/m
solid.SdevYZ	solid.SYZ	N/m
solid.SdevZ	solid.SZ-(solid.SX+solid.SY+solid.SZ)/3	N/m
solid.I1s	solid.sx+solid.sy+solid.sz	N/m
solid.I2s	0.5*(solid.I1s^2-solid.sx^2-2*solid.sxy^2-2*solid.sxz^2-solid.sy^2-2*solid.syz^2-solid.sz^2)	kg^
solid.I3s	solid.sx*solid.sy*solid.sz+2*solid.sxy*solid.syz*solid.sxz-solid.sx*solid.syz^2-solid.sxy^2*solid.sz-solid.sy*solid.sxz^2	kg^
solid.II2s	0.5*(solid.sdevx^2+2*solid.sdevxy^2+2*solid.sdevxz^2+solid.sdevy^2+2*solid.sdevyz^2+solid.sdevz^2)	kg^
solid.II3s	solid.sdevx*solid.sdevy*solid.sdevz+2*solid.sdevxy*solid.sdevyz*solid.sdevxz-solid.sdevx*solid.sdevyz^2-solid.sdevxy^2*solid.sdevz-solid.sdevy*solid.sdevxz^2	kg^
solid.thetaL	atan2(sqrt(max(0.14814814814814814*solid.II2s^3-solid.II3s^2,eps)),solid.II3s)/3	rad
solid.p	-(solid.sx+solid.sy+solid.sz)/3	Pa

solid.curlUX	wY-vZ	1
solid.curlUY	-wX+uZ	1
solid.curlUZ	vX-uY	1
solid.mises	(3*solid.II2s)^0.5	N/m
solid.tresca	max(max(abs(solid.sp1-solid.sp2),abs(solid.sp1-solid.sp3)),abs(solid.sp2-solid.sp3))	N/m
solid.RFx	reacf(u)	N
solid.RFy	reacf(v)	N
solid.RFz	reacf(w)	N
solid.RMx	solid.RFz*(Y+v-solid.refpnty)-solid.RFy*(Z+w-solid.refpntz)	N*m
solid.RMy	-solid.RFz*(X+u-solid.refpntx)+solid.RFx*(Z+w-solid.refpntz)	N*m
solid.RMz	solid.RFy*(X+u-solid.refpntx)-solid.RFx*(Y+v-solid.refpnty)	N*m
solid.Tax	solid.sx*solid.nx+solid.sxy*solid.ny+solid.sxz*solid.nz	N/m
solid.Tay	solid.sxy*solid.nx+solid.sy*solid.ny+solid.syz*solid.nz	N/m
solid.Taz	solid.sxz*solid.nx+solid.syz*solid.ny+solid.sz*solid.nz	N/m

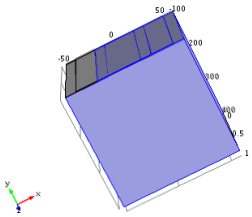
Shape Functions

Name	Shape function	Unit	Description	Shape frame	Selection
u	Lagrange	m	Displacement field, X component	Material	Domains 1-10
v	Lagrange	m	Displacement field, Y component	Material	Domains 1-10
w	Lagrange	m	Displacement field, Z component	Material	Domains 1-10

Weak Expressions

Weak expression	Integration frame	Selection
-solid.Sl11*test(solid.el11)-2*solid.Sl12*test(solid.el12)-solid.Sl13*test(solid.el13)-solid.Sl22*test(solid.el22)-2*solid.Sl23*test(solid.el23)-solid.Sl13*test(solid.el13)-solid.Sl33*test(solid.el33)	Material	Domains 1-10

1.4.2. Free 1

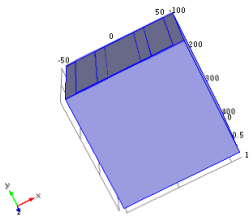


Free 1

Selection

Geometric entity level	Boundary
Selection	Boundaries 3-4, 20, 24-28, 30-32, 34-36, 38-45, 47-49, 51-54

1.4.3. Initial Values 1



Initial Values 1

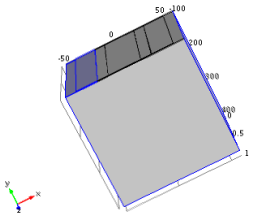
Selection

Geometric entity level	Domain
Selection	Domains 1-10

Variables

Name	Expression	Unit	Description	Selection
solid.uInitX	0	m	Initial value of displacement, X component	Domains 1-10
solid.uInitY	0	m	Initial value of displacement, Y component	Domains 1-10
solid.uInitZ	0	m	Initial value of displacement, Z component	Domains 1-10
solid.utInitX	0	m/s	Initial value of structural velocity, X component	Domains 1-10
solid.utInitY	0	m/s	Initial value of structural velocity, Y component	Domains 1-10
solid.utInitZ	0	m/s	Initial value of structural velocity, Z component	Domains 1-10

1.4.4. Fixed Constraint 1



Fixed Constraint 1

Selection

Geometric entity level	Boundary
Selection	Boundaries 1-2, 5-19, 21-23, 55-57

Equations

$$u = 0$$

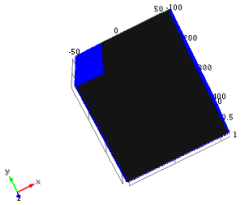
Constraints

Constraint	Constraint force	Shape function	Selection
-u	test(-u)	Lagrange	Boundaries 1-2, 5-19, 21-23, 55-57
-v	test(-v)	Lagrange	Boundaries 1-2, 5-19, 21-23, 55-57
-w	test(-w)	Lagrange	Boundaries 1-2, 5-19, 21-23, 55-57

1.5. Mesh 1

Mesh statistics

Property	Value
Minimum element quality	0.05532
Average element quality	0.7502
Tetrahedral elements	236031
Triangular elements	122630
Edge elements	4865
Vertex elements	56



Mesh 1

1.5.1. Size (size)

Settings

Name	Value
Maximum element size	6.04
Minimum element size	0.0604
Resolution of curvature	0.2
Maximum element growth rate	1.3
Predefined size	Extremely fine

2. Study 1

2.1. Eigenfrequency

Mesh selection

Geometry	Mesh
Geometry 1 (geom1)	mesh1

Physics selection

Physics interface	Discretization
Solid Mechanics (solid)	physics

2.2. Solver Configurations

2.2.1. Solver 1

Compile Equations: Eigenfrequency (st1)

Settings

Name	Value
Use study	Study 1
Use study step	Eigenfrequency

Dependent Variables 1 (v1)

Settings

Name	Value
Defined by study step	Eigenfrequency
Solution	Zero
Solution	Zero

Mod1.u (mod1_u)

Settings

Name	Value
Field components	{mod1.u, mod1.v, mod1.w}

Eigenvalue Solver 1 (e1)

Settings

Name	Value
Defined by study step	Eigenfrequency
Desired number of eigenvalues	4
Eigenvalue transformation	Eigenfrequency
Solution	Zero

Log

```
Eigenvalue Solver 1 in Solver 1 started at 22-Apr-2013 18:57:17.
Eigenvalue solver
Number of degrees of freedom solved for: 1283580.
Symmetric matrices found.
Scales for dependent variables:
mod1.u: 1
Iter      ErrEst  Nconv
   1       5e-23      4
20 linear system solutions.
20 matrix multiplications.
19 re-orthogonalizations.
Eigenvalue Solver 1 in Solver 1: Solution time: 165 s. (2 minutes, 45 seconds)
```

3. Results

3.1. Data Sets

3.1.1. Solution 1

Selection

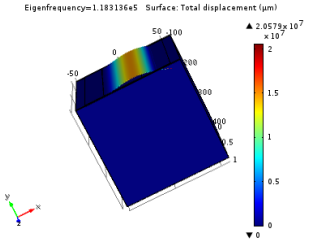
Geometric entity level	Domain
Selection	Geometry geom1

Settings

Name	Value
Solution	Solver 1
Model	Save Point Geometry 1

3.2. Plot Groups

3.2.1. Mode Shape (solid)



Eigenfrequency=1.183136e5 Surface: Total displacement (μm)