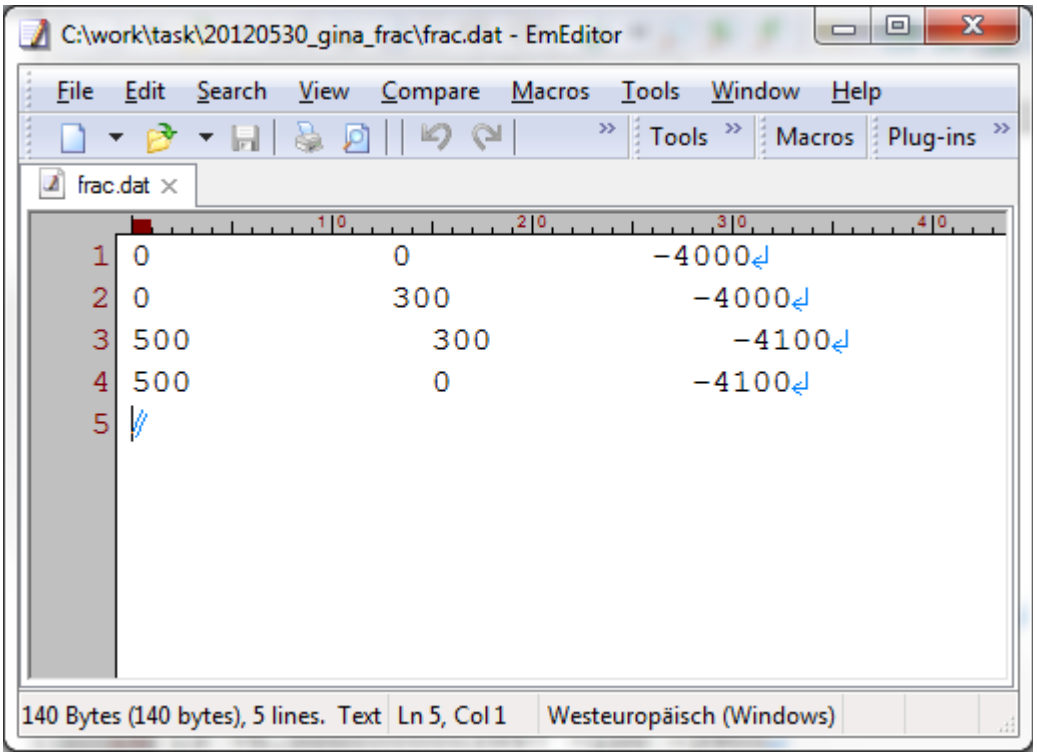
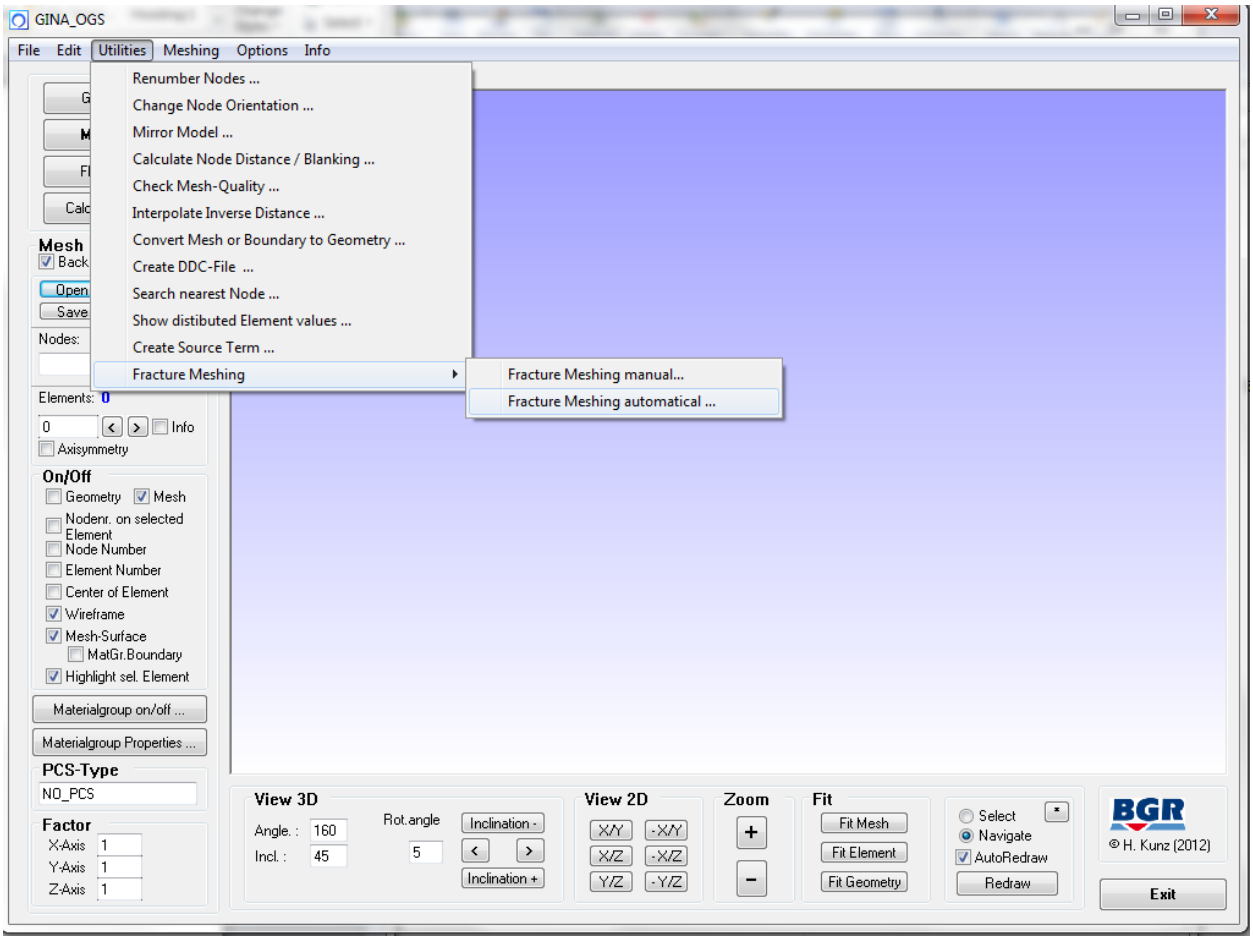
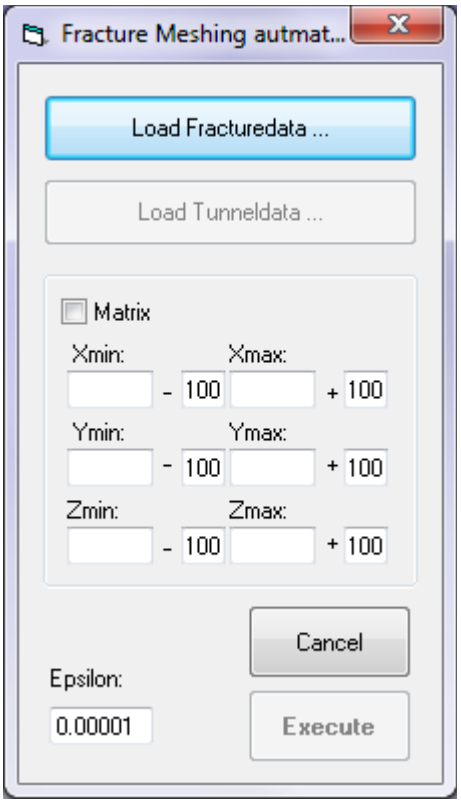
Meshing discrete fractures and surrounding rock matrix

1. Prepare fracture geometric data

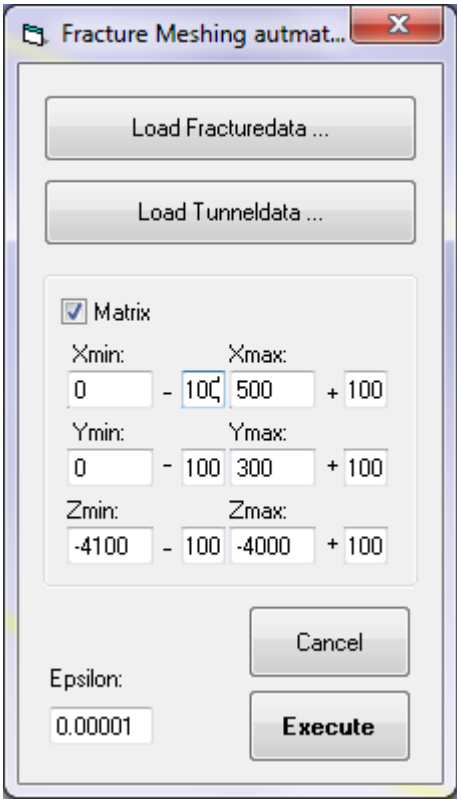


2.

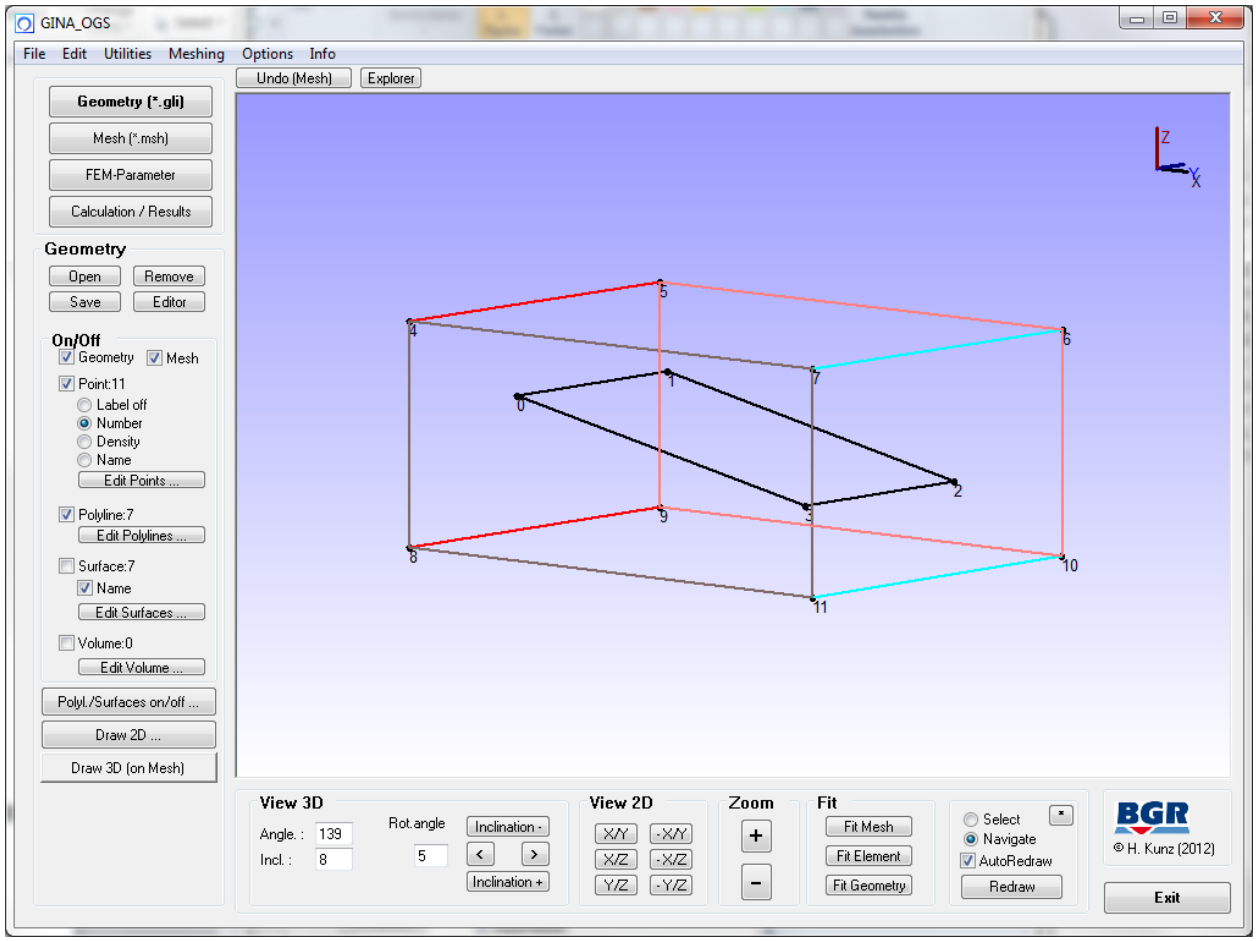

GINA_OGS
File
Edit
Utilities
Meshing
Options
Info
Renumber Nodes ...
Change Node Orientation ...
Mirror Model ...
Calculate Node Distance / Blanking ...
Check Mesh-Quality ...
Interpolate Inverse Distance ...
Convert Mesh or Boundary to Geometry ...
Create DDC-File ...
Search nearest Node ...
Show distibuted Element values ...
Create Source Term ...
Fracture Meshing
Fracture Meshing manual...
Fracture Meshing automatical ...
Mesh
Back
Open
Save
Nodes:
Elements: 0
Info
Axisymmetry
On/Off
Geometry
Mesh
Nodenr. on selected Element
Node Number
Element Number
Center of Element
Wireframe
Mesh-Surface
MatGr.Boundary
Highlight sel. Element
Materialgroup on/off ...
Materialgroup Properties ...
PCS-Type
NO_PCS
Factor
X-Axis 1
Y-Axis 1
Z-Axis 1
View 3D
Angle. : 160
Incl. : 45
Rot.angle
5
Inclination -
Inclination +
View 2D
X/Y
-X/Y
X/Z
-X/Z
Y/Z
-Y/Z
Zoom
Fit
Fit Mesh
Fit Element
Fit Geometry
Select
Navigate
AutoRedraw
Redraw
BGR
© H. Kunz (2012)
Exit

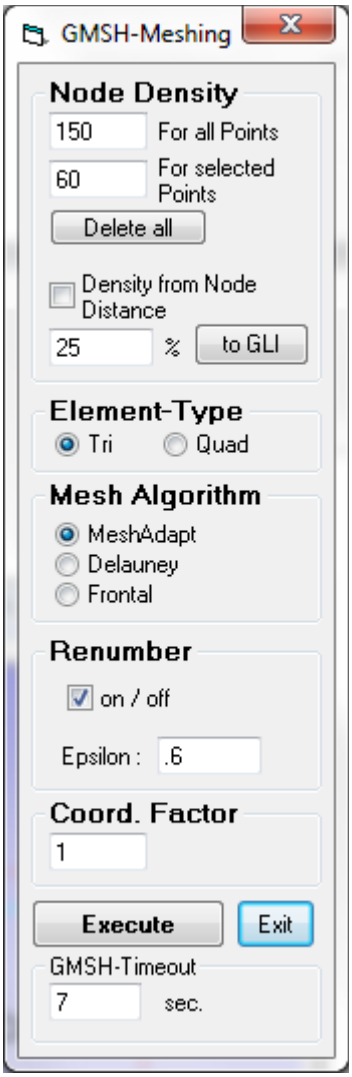


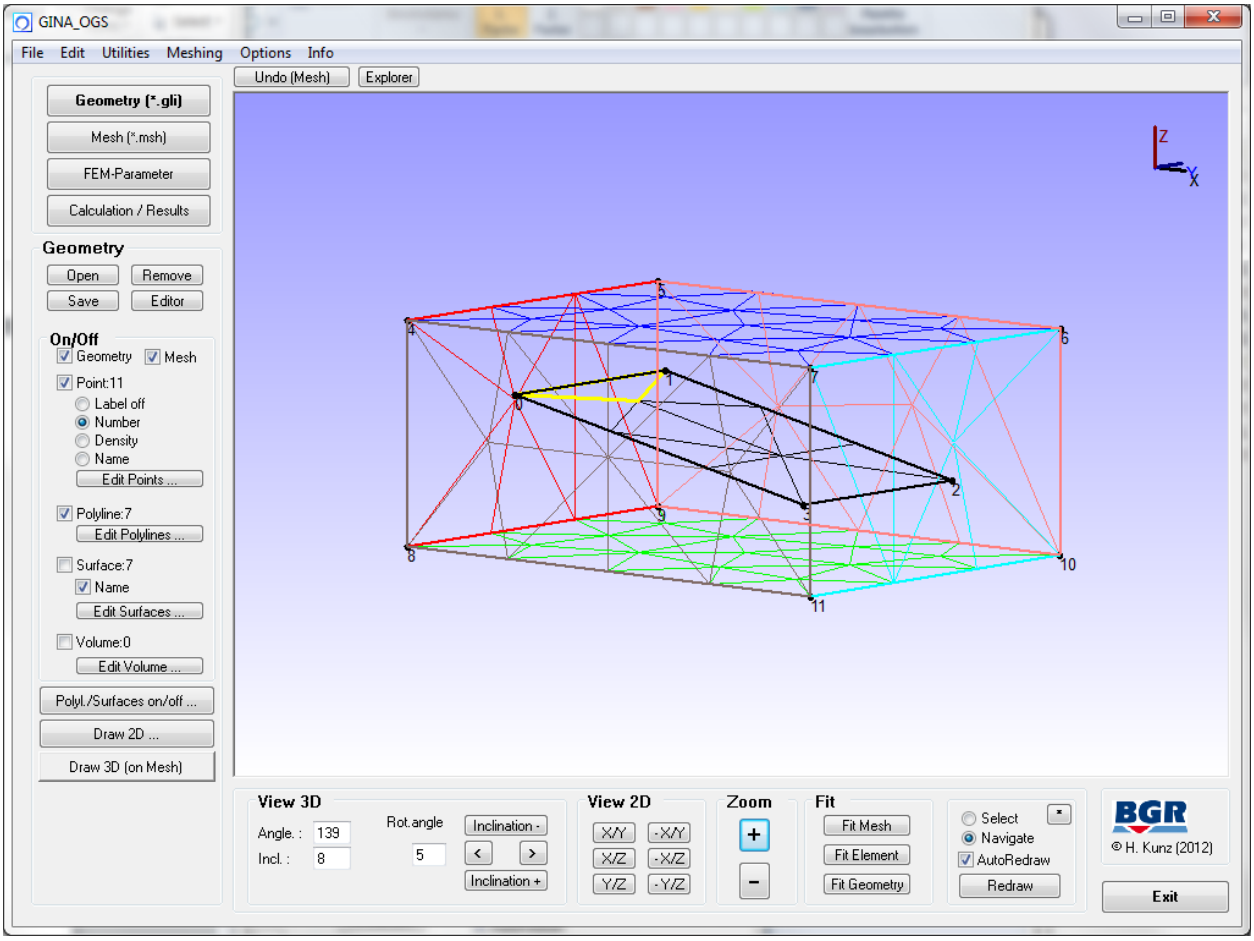
Select frac.dat

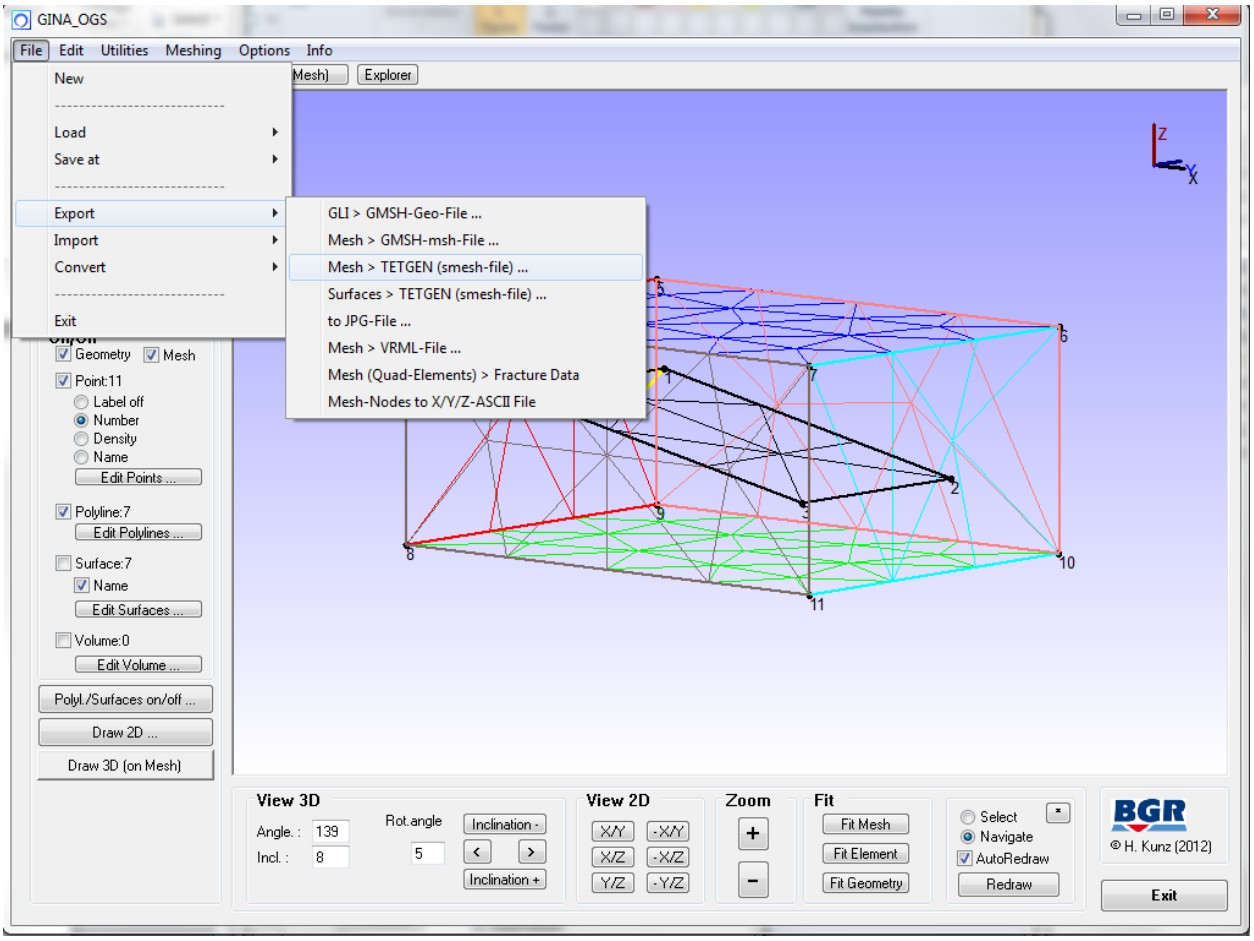


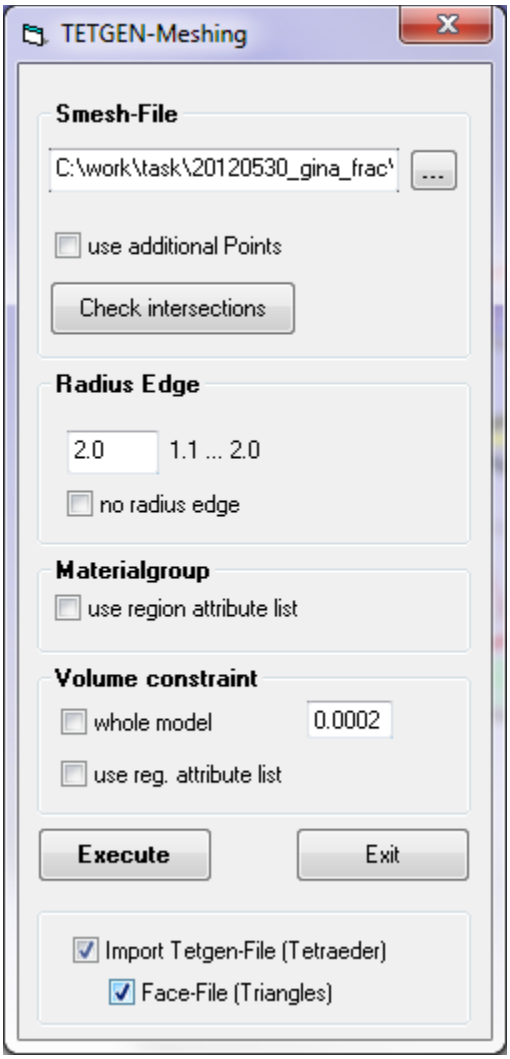
Remove Mesh? -> Yes

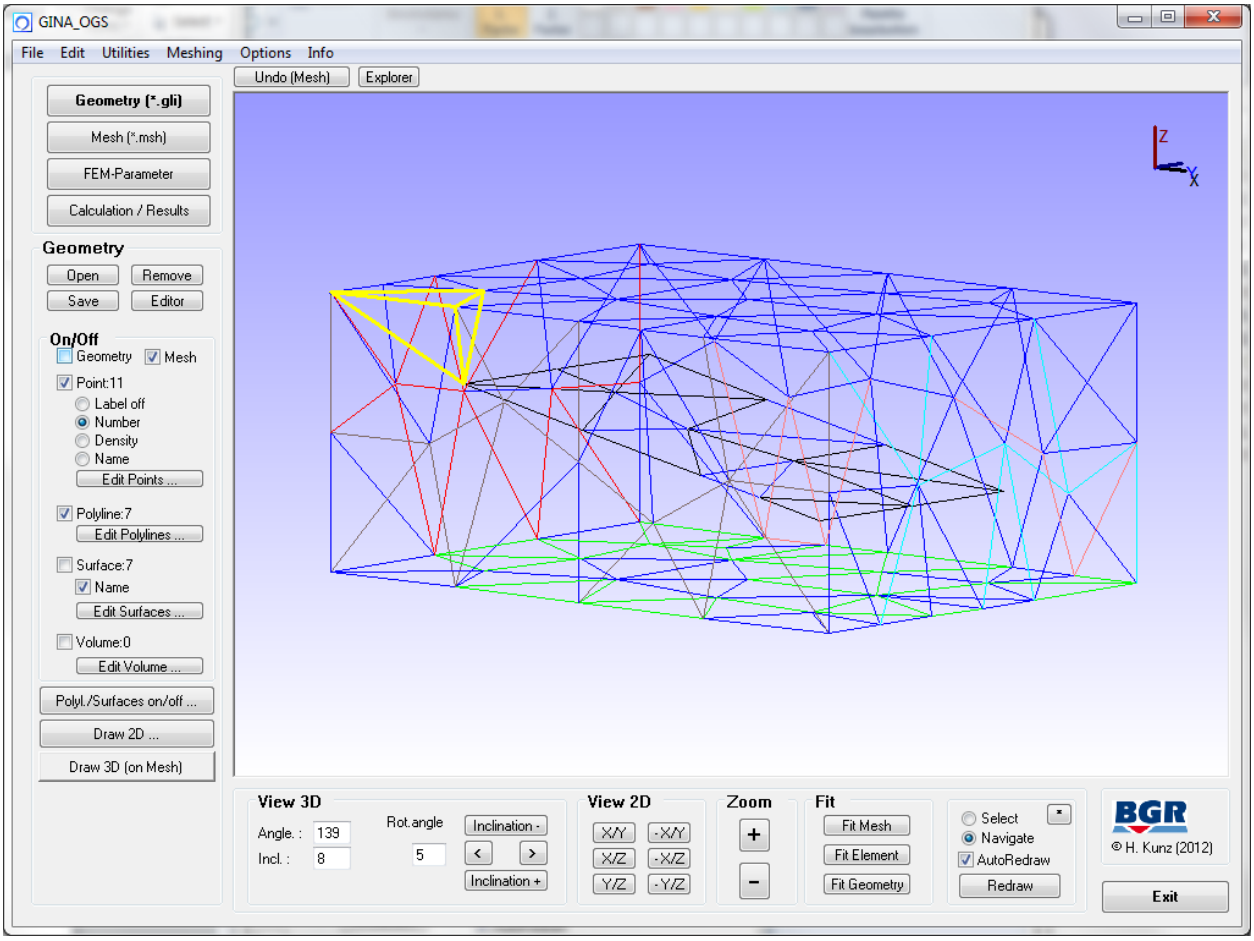


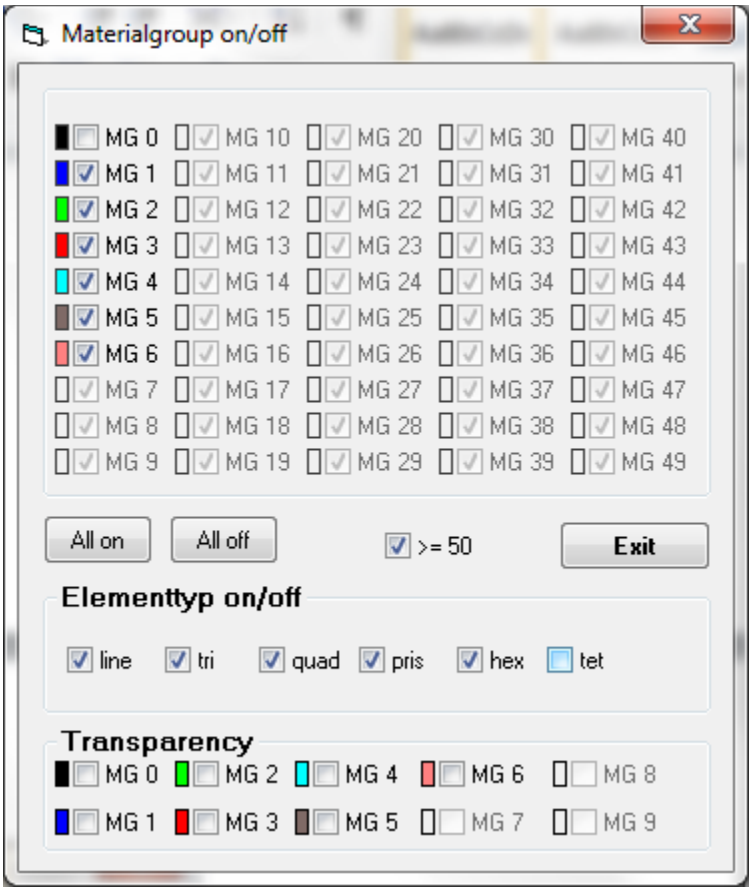

GMSH-Meshing
Node Density
150
For all Points
60
For selected Points
Delete all
Density from Node Distance
25
%
to GLI
Element-Type
Tri
Quad
Mesh Algorithm
MeshAdapt
Delauney
Frontal
Renumber
on / off
Epsilon :
.6
Coord. Factor
1
Execute
Exit
GMSH-Timeout
7
sec.

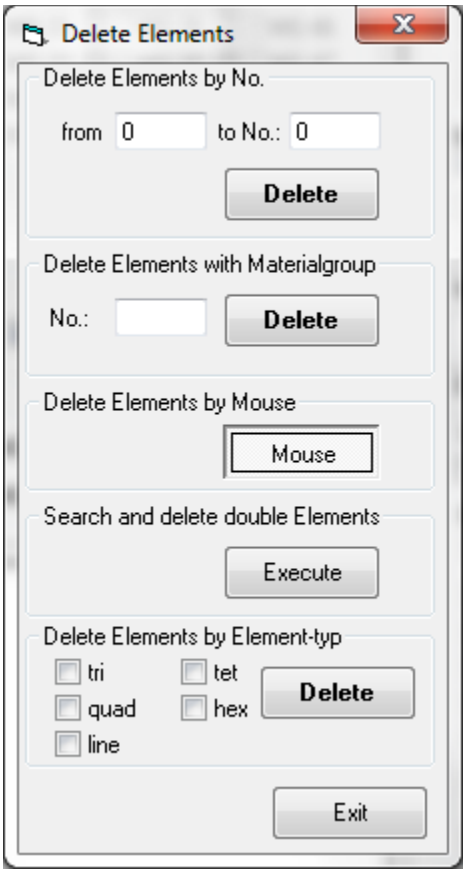

GINA_OGS
File Edit Utilities Meshing Options Info
Undo (Mesh)
Explorer
Geometry (*.gli)
Mesh (*.msh)
FEM-Parameter
Calculation / Results
Geometry
Open
Remove
Save
Editor
On/Off
Geometry
Mesh
Point:11
Label off
Number
Density
Name
Edit Points ...
Polyline:7
Edit Polylines ...
Surface:7
Name
Edit Surfaces ...
Volume:0
Edit Volume ...
Polyl./Surfaces on/off ...
Draw 2D ...
Draw 3D (on Mesh)
Z
X
0
1
2
3
4
5
6
7
8
9
10
11
View 3D
Angle. :
139
Incl. :
8
Rot.angle
5
Inclination -
Inclination +
View 2D
X/Y
-X/Y
X/Z
-X/Z
Y/Z
-Y/Z
Zoom
Fit
Fit Mesh
Fit Element
Fit Geometry
Select
Navigate
AutoRedraw
Redraw
BGR
© H. Kunz (2012)
Exit

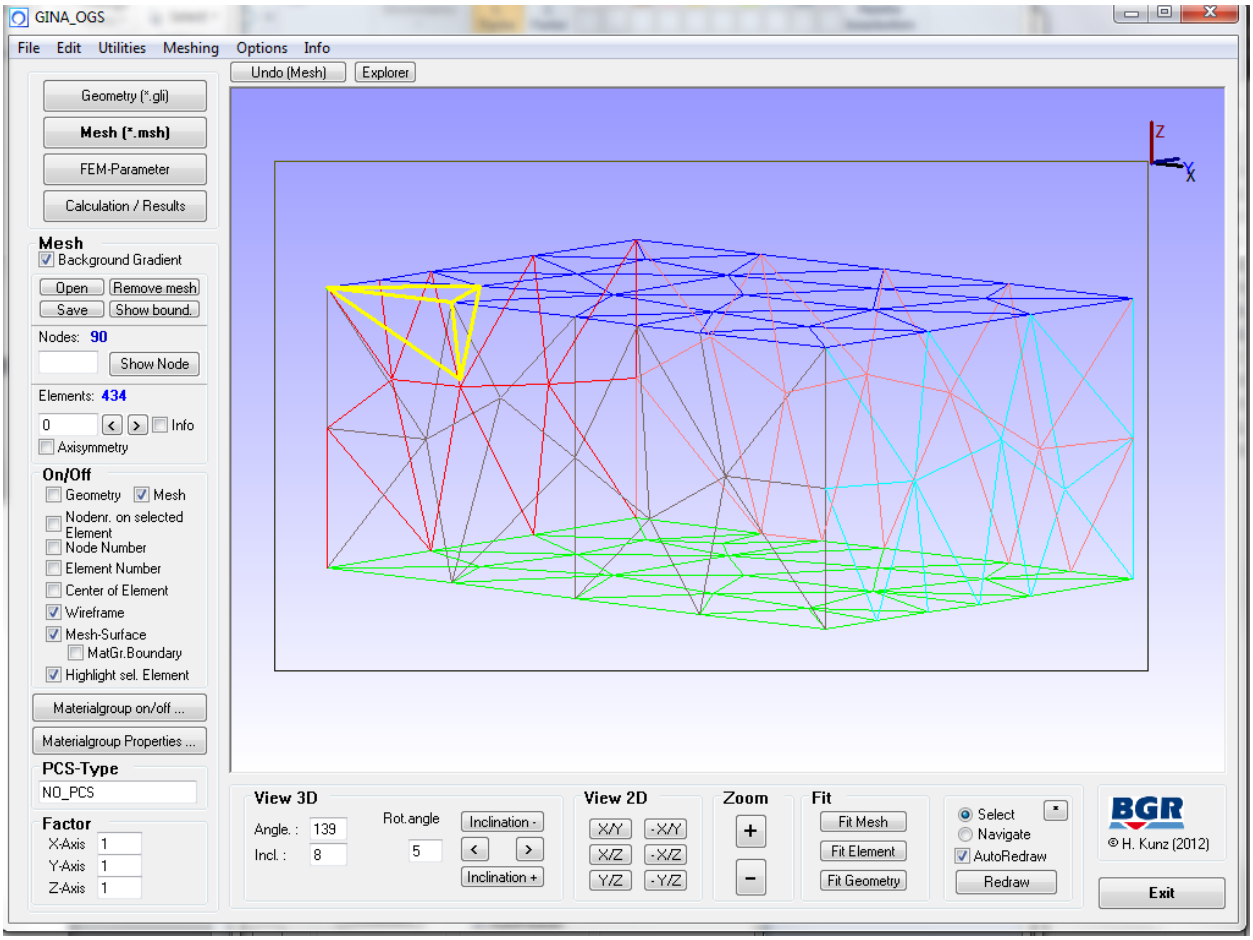

GINA_OGS
File
Edit
Utilities
Meshing
Options
Info
New
Load
Save at
Export
Import
Convert
Exit
GLI > GMSH-Geo-File ...
Mesh > GMSH-msh-File ...
Mesh > TETGEN (smesh-file) ...
Surfaces > TETGEN (smesh-file) ...
to JPG-File ...
Mesh > VRML-File ...
Mesh (Quad-Elements) > Fracture Data
Mesh-Nodes to X/Y/Z-ASCII File
Explorer
Geometry
Mesh
Point:11
Label off
Number
Density
Name
Edit Points ...
Polyline:7
Edit Polylines ...
Surface:7
Name
Edit Surfaces ...
Volume:0
Edit Volume ...
Polyl./Surfaces on/off ...
Draw 2D ...
Draw 3D (on Mesh)
View 3D
Angle. :
139
Incl. :
8
Rot.angle
5
Inclination -
Inclination +
View 2D
X/Y
-X/Y
X/Z
-X/Z
Y/Z
-Y/Z
Zoom
Fit
Fit Mesh
Fit Element
Fit Geometry
Select
Navigate
AutoRedraw
Redraw
BGR
© H. Kunz (2012)
Exit

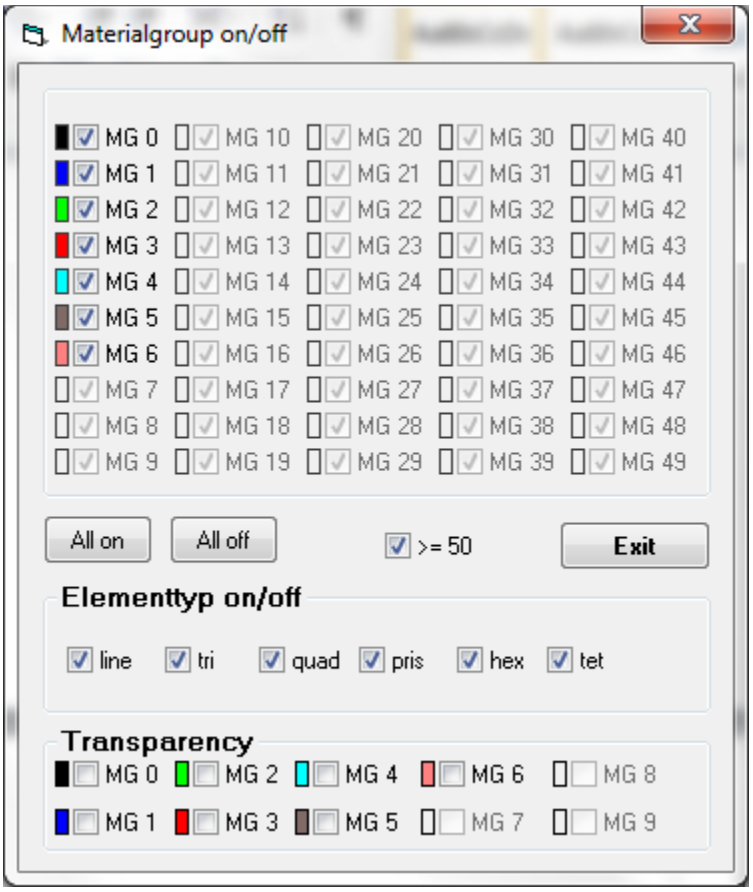

TETGEN-Meshing
Smesh-File
C:\work\task\20120530_gina_frac
...
use additional Points
Check intersections
Radius Edge
2.0
1.1 ... 2.0
no radius edge
Materialgroup
use region attribute list
Volume constraint
whole model
0.0002
use reg. attribute list
Execute
Exit
Import Tetgen-File (Tetraeder)
Face-File (Triangles)

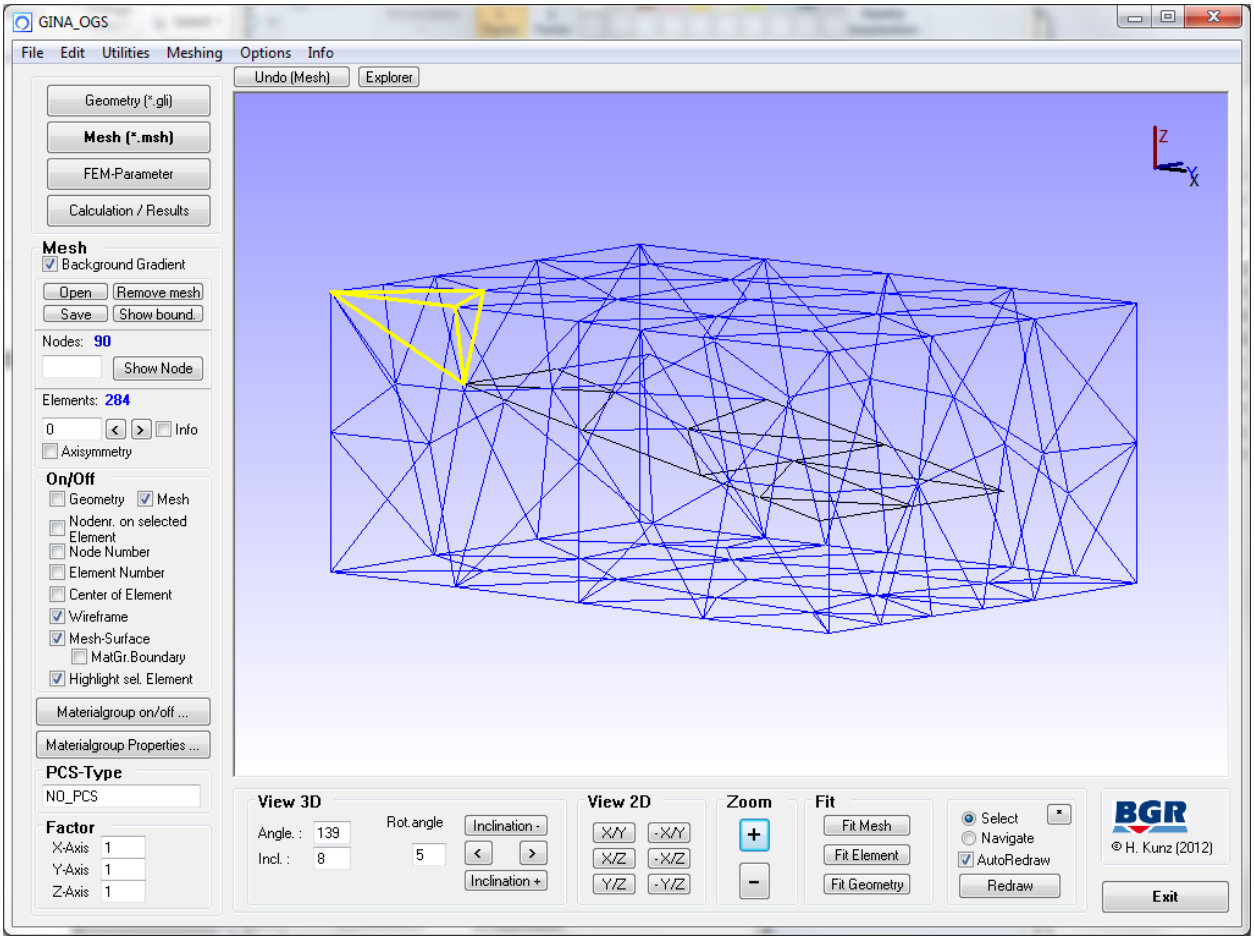

GINA_OGS
File Edit Utilities Meshing Options Info
Undo (Mesh)
Explorer
Geometry (*.gli)
Mesh (*.msh)
FEM-Parameter
Calculation / Results
Geometry
Open
Remove
Save
Editor
On/Off
Geometry
Mesh
Point:11
Label off
Number
Density
Name
Edit Points ...
Polyline:7
Edit Polylines ...
Surface:7
Name
Edit Surfaces ...
Volume:0
Edit Volume ...
Polyl./Surfaces on/off ...
Draw 2D ...
Draw 3D (on Mesh)
Z
X
View 3D
Angle. : 139
Incl. : 8
Rot.angle
5
Inclination -
Inclination +
View 2D
X/Y
-X/Y
X/Z
-X/Z
Y/Z
-Y/Z
Zoom
Fit
Fit Mesh
Fit Element
Fit Geometry
Select
Navigate
AutoRedraw
Redraw
BGR
© H. Kunz (2012)
Exit


Materialgroup on/off
MG 0 MG 10 MG 20 MG 30 MG 40
MG 1 MG 11 MG 21 MG 31 MG 41
MG 2 MG 12 MG 22 MG 32 MG 42
MG 3 MG 13 MG 23 MG 33 MG 43
MG 4 MG 14 MG 24 MG 34 MG 44
MG 5 MG 15 MG 25 MG 35 MG 45
MG 6 MG 16 MG 26 MG 36 MG 46
MG 7 MG 17 MG 27 MG 37 MG 47
MG 8 MG 18 MG 28 MG 38 MG 48
MG 9 MG 19 MG 29 MG 39 MG 49
All on
All off
>= 50
Exit
Elementtyp on/off
line
tri
quad
pris
hex
tet
Transparency
MG 0 MG 2 MG 4 MG 6 MG 8
MG 1 MG 3 MG 5 MG 7 MG 9


Delete Elements
Delete Elements by No.
from 0
to No.: 0
Delete
Delete Elements with Materialgroup
No.:
Delete
Delete Elements by Mouse
Mouse
Search and delete double Elements
Execute
Delete Elements by Element-typ
tri
tet
quad
hex
line
Delete
Exit


GINA_OGS
File Edit Utilities Meshing Options Info
Undo (Mesh)
Explorer
Geometry (*.gli)
Mesh (*.msh)
FEM-Parameter
Calculation / Results
Mesh
Background Gradient
Open
Remove mesh
Save
Show bound.
Nodes: 90
Show Node
Elements: 434
Info
Axisymmetry
On/Off
Geometry
Mesh
Nodenr. on selected Element
Node Number
Element Number
Center of Element
Wireframe
Mesh-Surface
MatGr.Boundary
Highlight sel. Element
Materialgroup on/off ...
Materialgroup Properties ...
PCS-Type
NO_PCS
Factor
X-Axis 1
Y-Axis 1
Z-Axis 1
Z
X
View 3D
Angle. : 139
Incl. : 8
Rot.angle
5
Inclination -
Inclination +
View 2D
X/Y
-X/Y
X/Z
-X/Z
Y/Z
-Y/Z
Zoom
Fit
Fit Mesh
Fit Element
Fit Geometry
Select
Navigate
AutoRedraw
Redraw
BGR
© H. Kunz (2012)
Exit


Materialgroup on/off
MG 0 MG 10 MG 20 MG 30 MG 40
MG 1 MG 11 MG 21 MG 31 MG 41
MG 2 MG 12 MG 22 MG 32 MG 42
MG 3 MG 13 MG 23 MG 33 MG 43
MG 4 MG 14 MG 24 MG 34 MG 44
MG 5 MG 15 MG 25 MG 35 MG 45
MG 6 MG 16 MG 26 MG 36 MG 46
MG 7 MG 17 MG 27 MG 37 MG 47
MG 8 MG 18 MG 28 MG 38 MG 48
MG 9 MG 19 MG 29 MG 39 MG 49
All on
All off
>= 50
Exit
Elementtyp on/off
line tri quad pris hex tet
Transparency
MG 0 MG 2 MG 4 MG 6 MG 8
MG 1 MG 3 MG 5 MG 7 MG 9


GINA_OGS
File Edit Utilities Meshing Options Info
Undo (Mesh)
Explorer
Geometry (*.gli)
Mesh (*.msh)
FEM-Parameter
Calculation / Results
Mesh
Background Gradient
Open
Remove mesh
Save
Show bound.
Nodes: 90
Show Node
Elements: 284
Info
Axisymmetry
On/Off
Geometry
Mesh
Nodenr. on selected Element
Node Number
Element Number
Center of Element
Wireframe
Mesh-Surface
MatGr.Boundary
Highlight sel. Element
Materialgroup on/off ...
Materialgroup Properties ...
PCS-Type
NO_PCS
Factor
X-Axis 1
Y-Axis 1
Z-Axis 1
Z
X
View 3D
Angle. : 139
Incl. : 8
Rot.angle
5
Inclination -
Inclination +
View 2D
X/Y
-X/Y
X/Z
-X/Z
Y/Z
-Y/Z
Zoom
Fit
Fit Mesh
Fit Element
Fit Geometry
Select
Navigate
AutoRedraw
Redraw
BGR
© H. Kunz (2012)
Exit