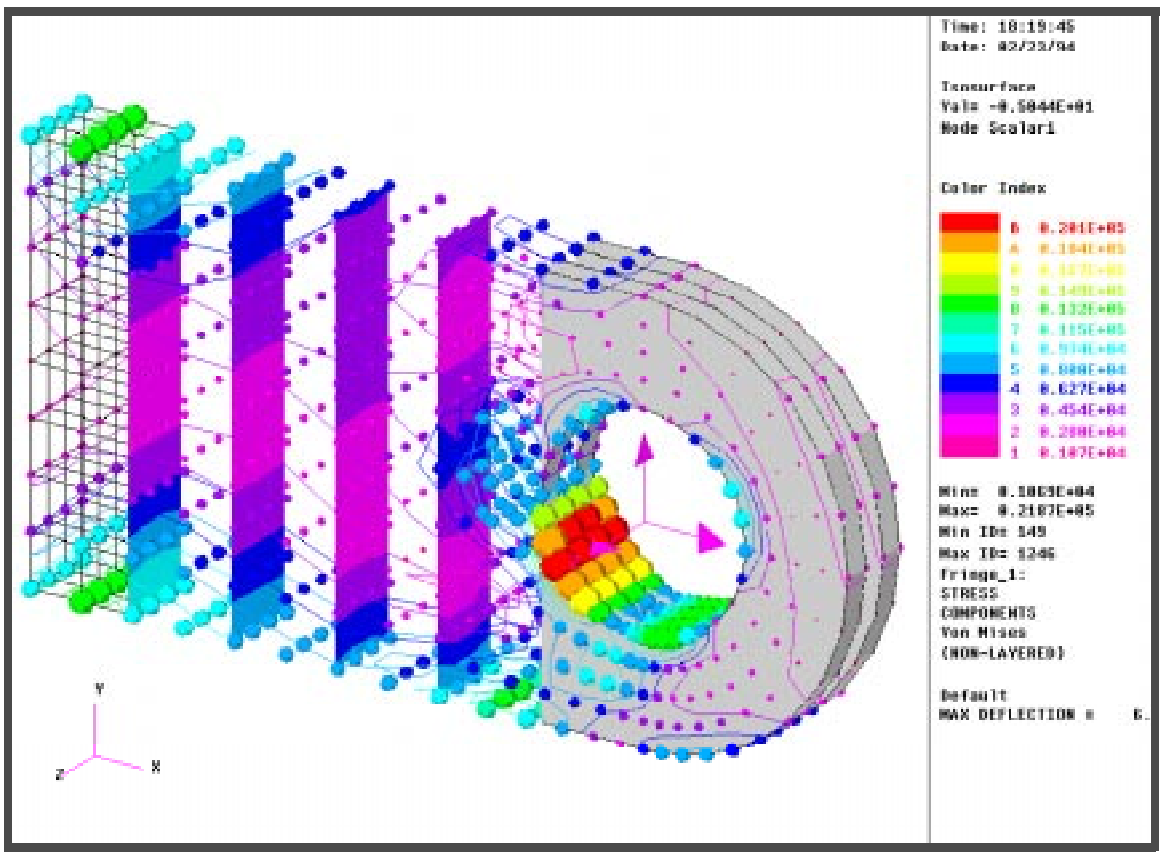
LESSON 8

Post Processing with Insight



Objectives:

- Create various Insight tools.
- Insight Tools Superposition.

Model Description:

In this Exercise you will retrieve a clevis model which was analyzed using MSC/NASTRAN. You will create various Insight tools to display the results of the analysis.

Suggested Exercise Steps:

- Open the new database**, `clevis.db`**.
- Create an Insight Isosurface tool of Von Mises stress. The tool should be defined to have 4 isosurfaces. Define the isosurface attributes to incorporate solid edge display and to be clipped such that the model is rendered shaded below the range and wire frame above the range.
- Modify the Isosurface tool making the isosurfaces 90% transparent.
- Unpost the isosurface and create a Contour tool of the Von Mises stress.
- Dynamically change the minimum, maximum, and number of levels of the current range.
- Create a new range called **new_range** with 12 subranges. Define its start and end to be 1000 and 8000 respectively. Modify the viewport's displayed range to Range1.
- Unpost the Contour tool and create a new Isosurface tool defined at x-axis coordinate locations. Define the tool to have 5 isosurfaces located between -5.95 and -1 inclusive. The isosurface color should be White and the model should be clipped and displayed as free edges above and below the defined isosurface range.
- Create a Fringe tool of Von Mises stress and post it on the second isosurface tool.

Exercise Procedure:

1. Create a new database and name it **clevis.db**.

File/New...

New Database Name	**clevis**

OK

2. Change the *Tolerance* to **Default** and the *Analysis Code* to **MSC/NASTRAN**.

New Model Preference

Tolerance ◆ **Default**

Analysis Code: **MSC/NASTRAN**

OK

Import the model and results

3. Import the new clevis model and results for this exercise by reading the output2 file **`clevis.op2`**.

◆ **Analysis**

Action: **Read Output2**

Object: **Both**

Method: **Translate**

Select Results File...

Selected Results File **clevis.op2**

OK

Apply

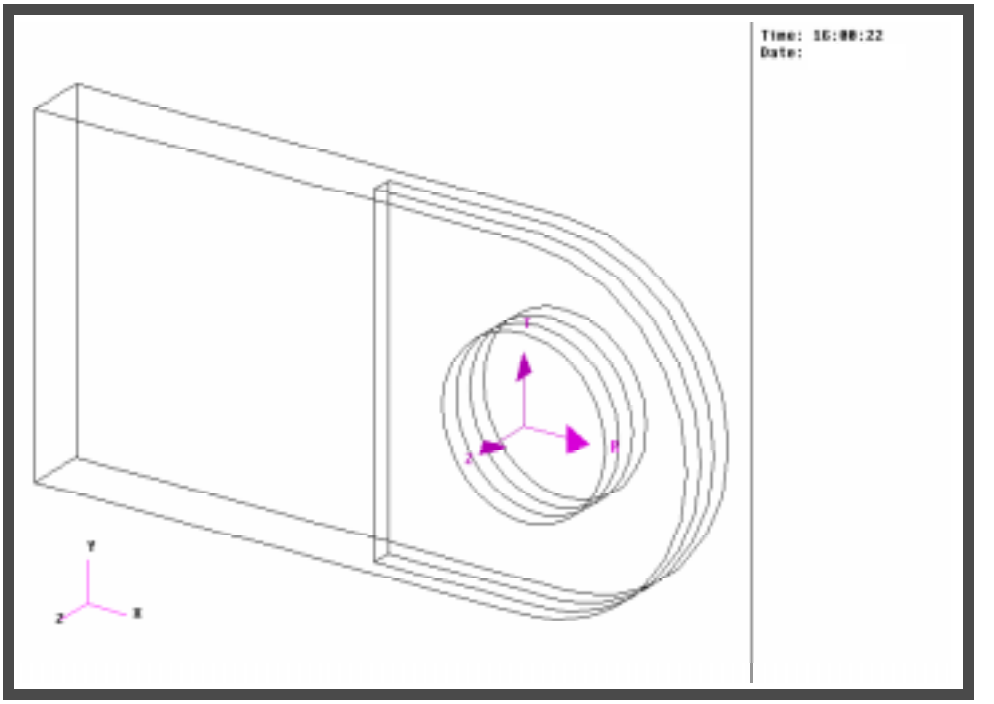
4. Create an Insight Isosurface tool of Von Mises stress. The tool should be defined to have 4 isosurfaces. Define the isosurface attributes to incorporate solid edge display and to be clipped such that the model is rendered shaded below the range and wireframe above the range.

Change the model to an **isometric_view**.

Click on the **Insight** radio button in the *Main Form.*

◆ **Insight**

You should see the MSC/PATRAN viewport close and a moment later an Insight viewport will open.



Create an Isosurface Tool

The first Insight tool you will create is an Isosurface of constant Von Mises stress.

Action:	**Create**
Tool:	**Isosurface**

Results Selection...

Isosurface Result	**3.1-Stress Tensor**

Next, create 4 isosurfaces that fall approximately within the range, 3,000 to 13,000.

Isovalue Setup...

Isovalue	**3000**
Ending Value	**13000**
Number of Isos	**4**

OK

Results Options...

Transform Method **Von Mises**

OK

Isosurface Attributes...

Clip at Isosurface

Select render styles such that your model's edges appear as **Shaded** for values less than the selected range and as **Wireframe** for the values larger than the selected range.

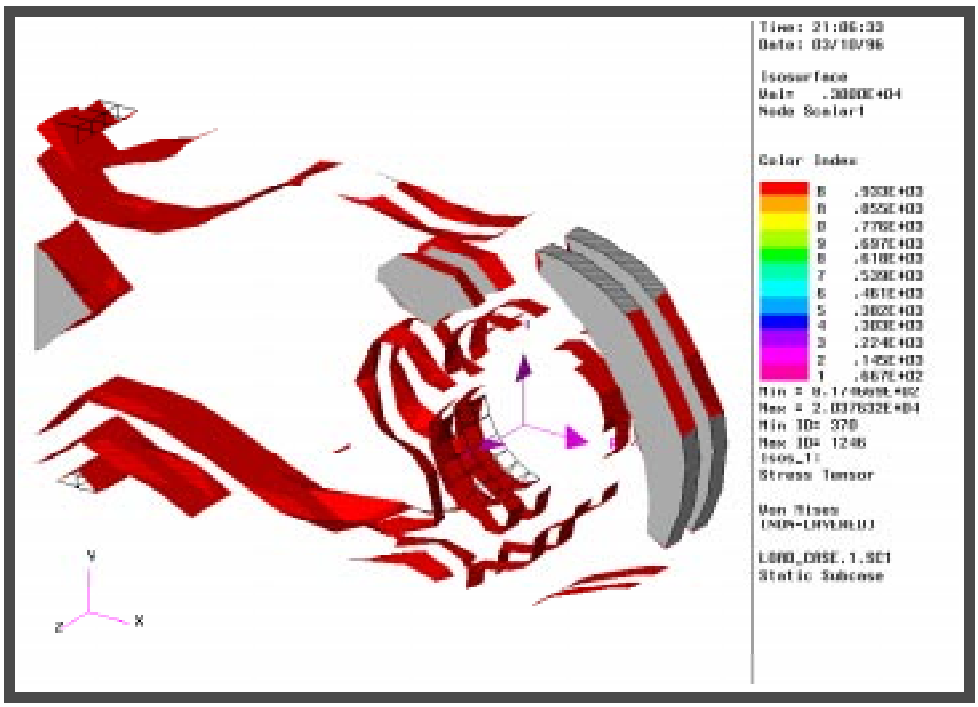
< Display: **Shaded**

> Display: **Wireframe**

OK

Apply

Your model should look like the one shown in the figure below.



5. Modify the Isosurface tool making the isosurfaces 90% transparent.

Modify an Isosurface Tool

Action:	**Modify**
Tool:	**Isosurface**
Existing Isosurfaces	**Isos_1**

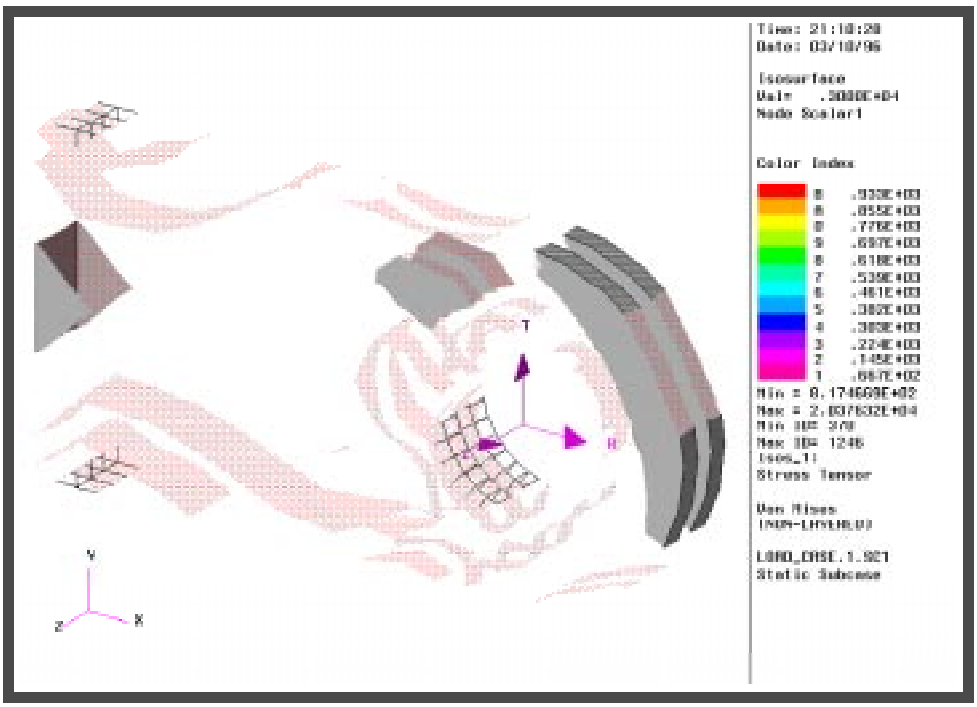
Isosurface Attributes...

Transparency	**0.90**

OK

Apply

Your isosurfaces should now look like the one shown below.



6. Unpost the isosurface and create a Contour tool of the Von Mises stress.

Unpost an Isosurface Tool

Insight Control/Post/Unpost Tools...

Select None

Apply

Cancel

Create an Insight Contour Tool

7. Next, you will create an Insight contour tool.

Action: **Create**

Tool: **Contour**

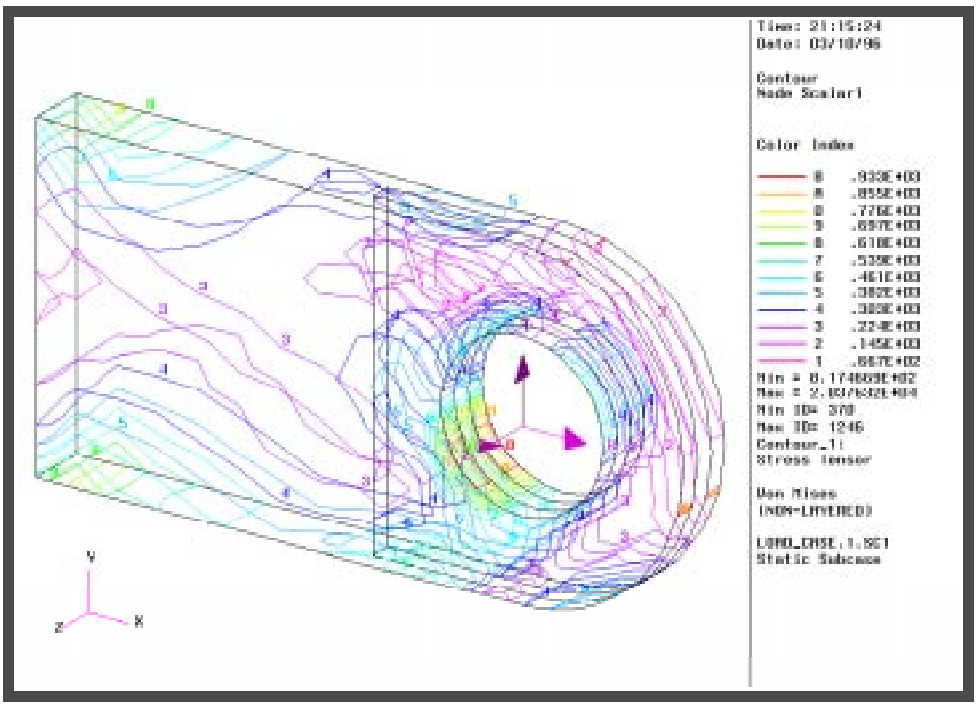
Results Selection...

Contour Results **Stress Tensor**

OK

Apply

This creates the contour tool, **Contour_1**. Your first contour tool should look like the one shown in the figure below.



Using and Displaying Different Ranges

8. Dynamically change the minimum, maximum, and number of levels of the current range.

Insight Control/Range Control...

From Actions **Immediate**

Now, try changing the slider bars which dynamically will change the displayed results range. Change the *Form Actions* back to **Upon Apply** before continue.

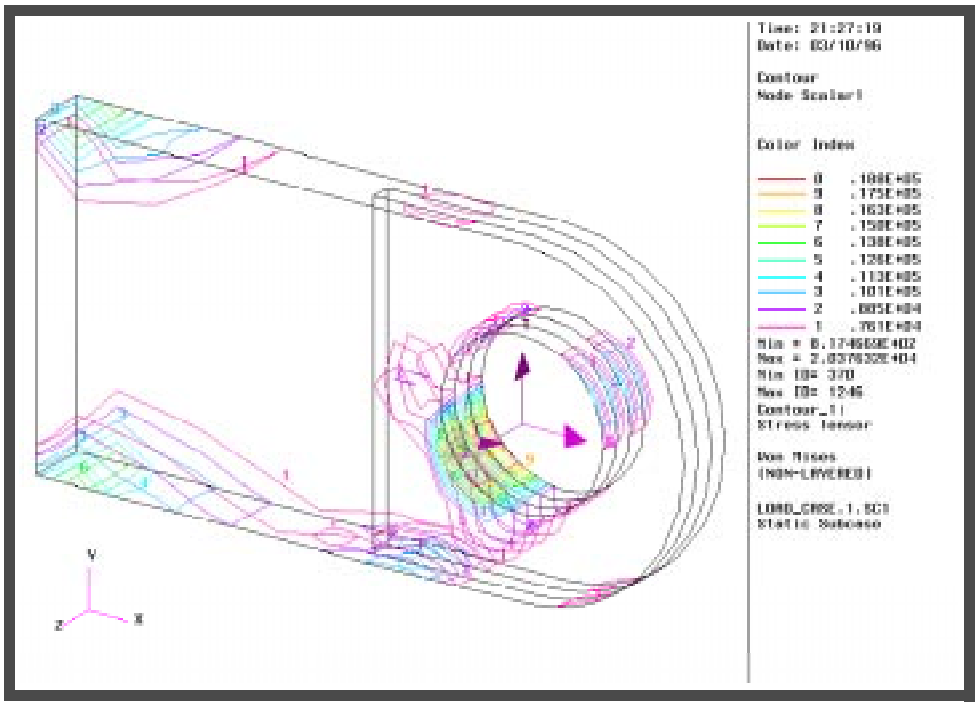
By default, the *Active Range Method* is set to **Auto**. The Auto range assigns the spectrum range based on the result range of the current tool. Under **Insight Control/Range Control…**, you can change the minimum and maximum values of the range and the number of levels in the range by moving the *Min., Max., and Levels* slide bars. You can also enter values into the *Min., Max., and Levels* databoxes. Make the following changes to the *Range Control* form.

Min.	**8000**
Max.	**20000**
Levels	**10**

Apply

Cancel

Your Contour Tool should look like the one shown in the figure below.



When you click on **Viewport** in the *Active Range Method box* (do this now), the range associated with the viewport is posted. In this case, the standard range is the active range in the viewport.

Create a Second Isosurface Tool

9. Unpost the Contour tool and create a new Isosurface tool defined at x-axis coordinate locations. Define the tool to have 5 isosurfaces located between -5.95 and -1 inclusive. The isosurface color should be White and the model should be clipped and displayed as free edges above and below the defined isosurface range.

Insight Control/Post/Unpost Tools...

Select Tools to Post	Unhighlight **Contour Tool**

Apply

Cancel

You are going to create an **Isosurface tool** defined at coordinate locations and then create and target a **Fringe tool** on the **Isosurface tool.**

Action:	**Create**
Tool:	**Isosurface**
Isosurface Value	**Coord**

Coordinate Selection...

Existing Coordinate Frame Axes	**R- CoordinateFrame(0)**
Coordinate Axis	**X-Axis**
Number of Isos	**5**
Starting Value	**-5.95**
Ending Value	**-1.0**

OK

Isosurface Attributes...

Color:	**White**

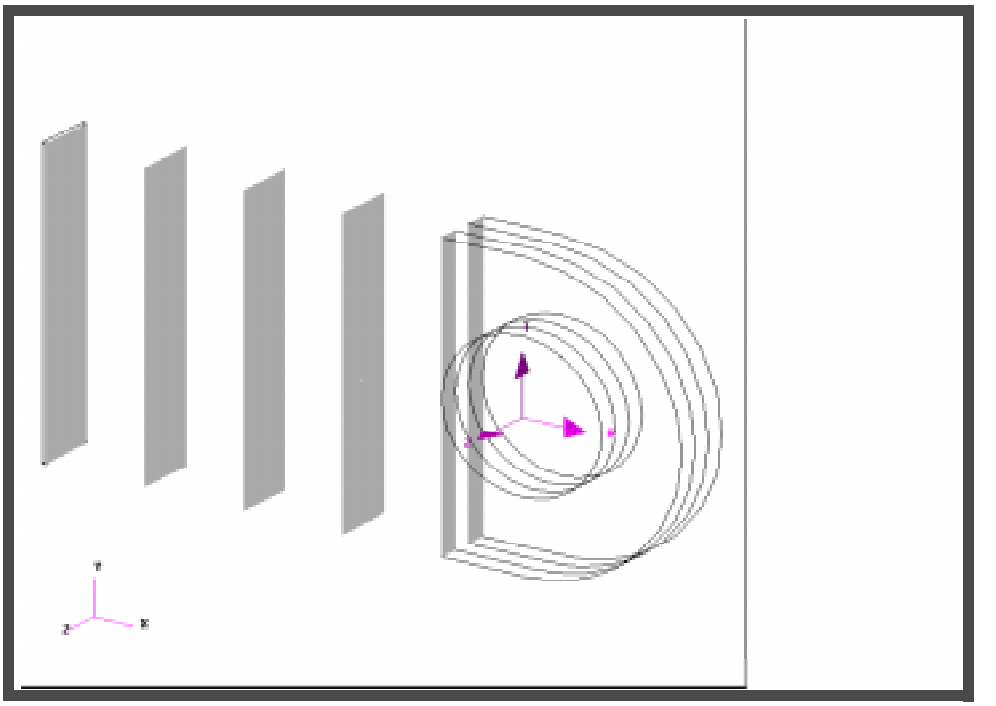
Clip at Isosurface

< Display:	**Free Edge**
> Display:	**Free Edge**

OK

Apply

Your second isosurface tool should look like the one shown below.

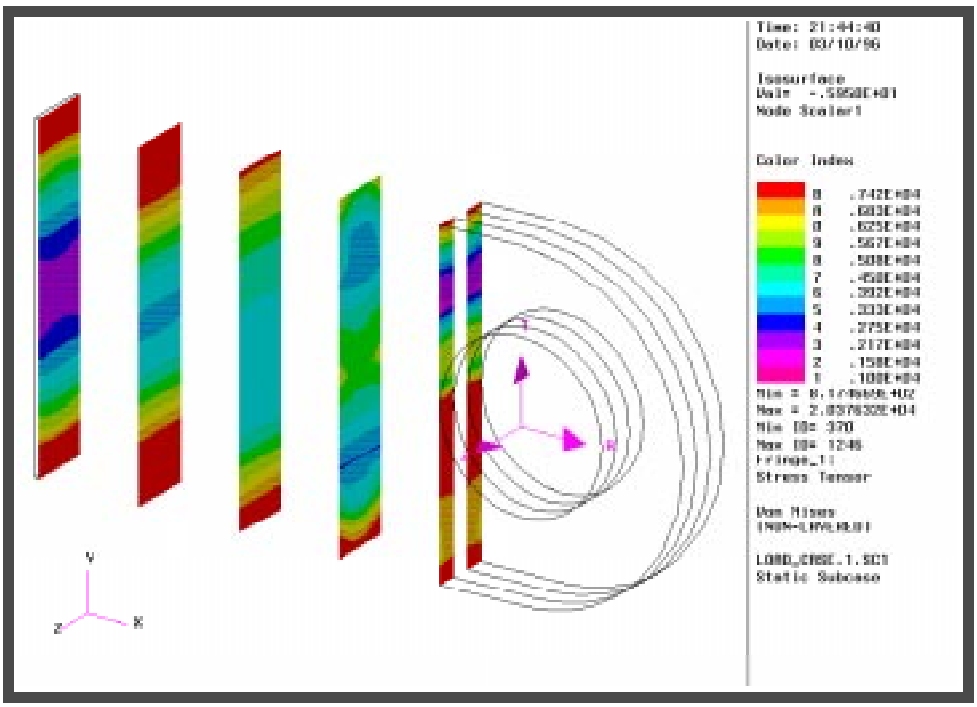


10. Create a Fringe tool of Von Mises stress and post it on the second isosurface tool.

Create a Fringe Tool Posted on an Isosurface

Action:	**Create**
Tool:	**Fringe**
Results Selection...	
Fringe Results	**Stress Tensor**
OK	
Target	**Isosurfaces**
Target Isosurfaces	**Isos_2**
Apply	

Your Fringe tool should look similar to the one shown below.



File/Quit