Altair

HyperWorks

Altair HyperView 2019 Tutorials

HV-3000: Contouring Results

## HV-3000: Contouring Results

In this tutorial, you will learn how to:

- Create a stress contour on all components using the **Results Browser**

- Create a contour on specific elements using stress results

- Create an averaged stress contour and generate iso surfaces

- Create a **Plot Style** to be used in the **Results Browser**

- Contour vector and tensor results resolved in different coordinate systems

- Edit the legend

Tools

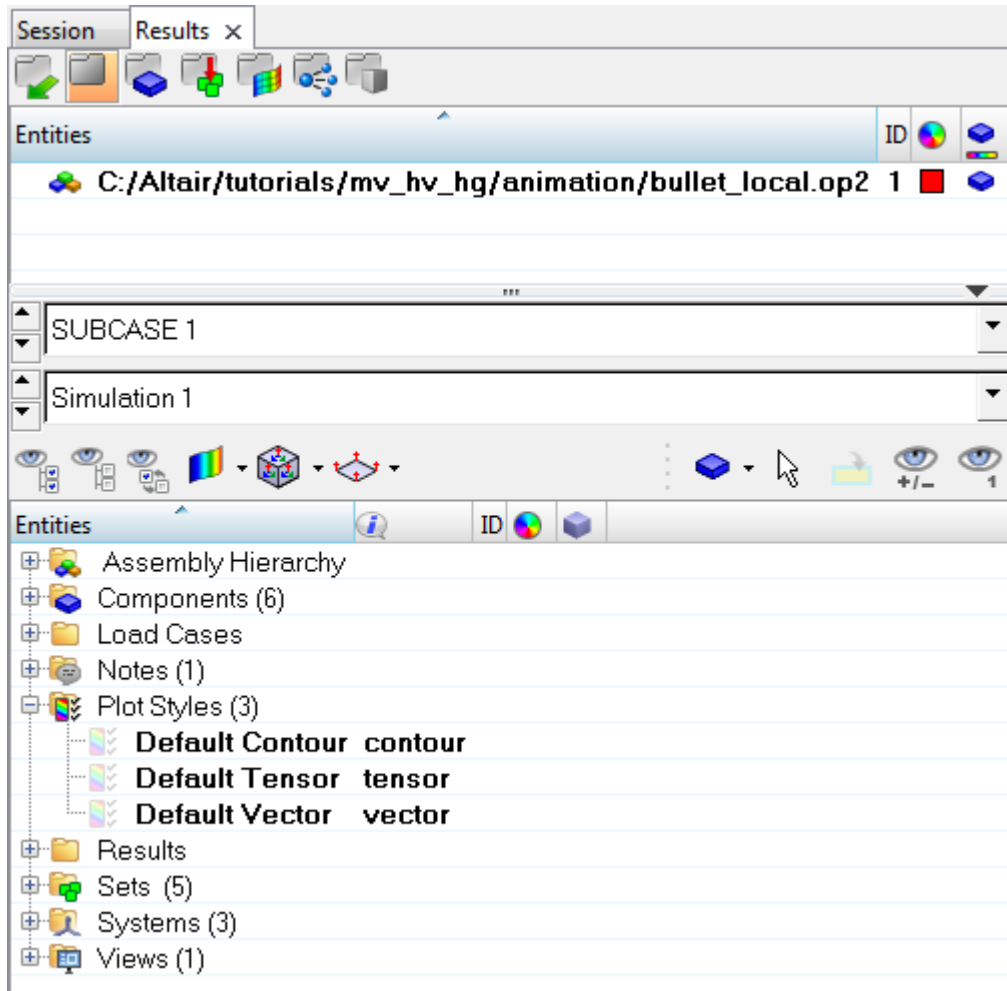To access the **Contour** panel:

- Click the **Contour** panel button 🎨 on the **Result** toolbar.

  OR

- Select **Results > Plot > Contour** from the menu bar.
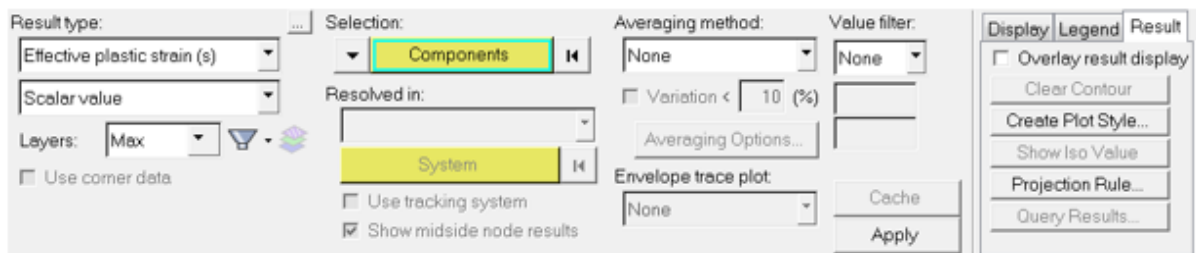
The **Contour** panel allows you to contour a model and graphically visualize the results. In the **Contour** panel you can view vector, tensor, or scalar type results.

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To access the **Results Browser**:

- Select *View > Browsers > HyperView > Results* from the menu bar.
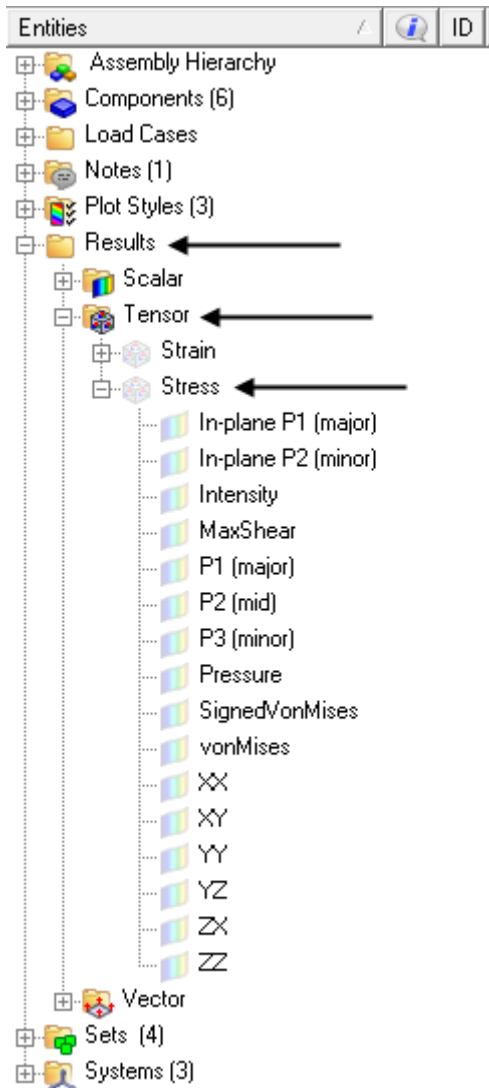

Exercise: Using the Contour Panel

This exercise uses the model file, bullet_local.op2.

Step 1: Create a Stress contour on all components using the Results Browser.

1. Load the bullet_local.op2 file, located in the animation folder.

2. Open the **Results Browser** by selecting *View > Browsers > HyperView > Results*.
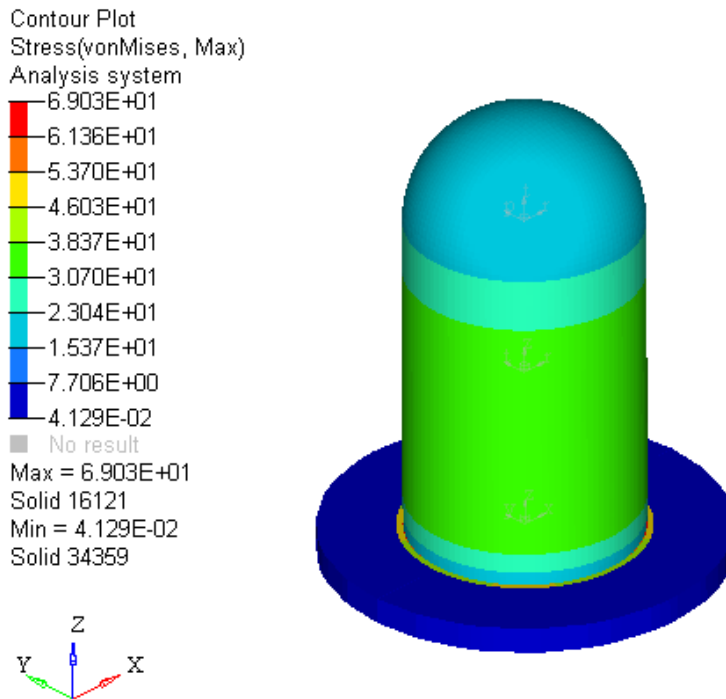
3. Expand the **Results**, **Tensor**, and **Stress** folders.

All available stress values are listed under the **Stress** folder.

4.   Click on the icon next to **vonMises**.

The contour is applied to the model in the graphics area.

Contour Plot
Stress(vonMises, Max)
Analysis system
—6.903E+01
—6.136E+01
—5.370E+01
—4.603E+01
—3.837E+01
—3.070E+01
—2.304E+01
—1.537E+01
—7.706E+00
—4.129E-02
■ No result
Max = 6.903E+01
Solid 16121
Min = 4.129E-02
Solid 34359

Step 2: Alter the contour settings using the Contour panel.

1.   Click the **Contour** panel button   on the **Result** toolbar to enter the **Contour** panel.
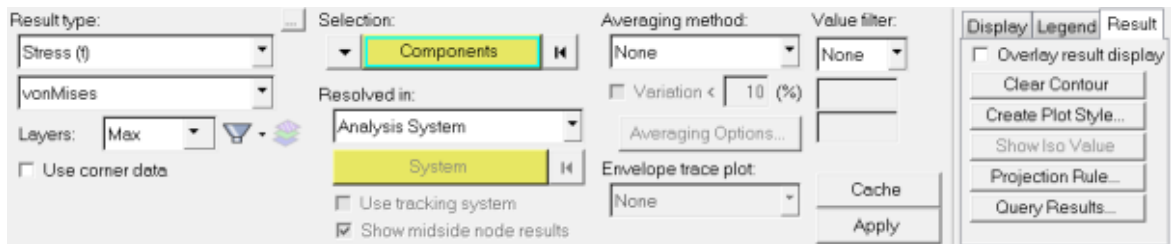
Using the **Contour** panel, additional options can be changed and applied to the contour.

2.   Select **Z1** for **Entity with Layers**.

The options for **Entity with Layers** are:

–   **Max** displays the maximum values between layers Z1 and Z2.

–   **Min** displays the minimum values between layers Z1 and Z2.

–   **Extreme** displays the maximum absolute values among the layers for each entity.

–   **Z1/Z2** displays the layers for thick shells. These will vary based on the solver type.

3. Verify that **Resolved in** is set to *Analysis System* and that the **Averaging method** is set to *None*.

4. Click *Apply*.

    By default, the results are applied to all the model components displayed on the screen.

    You can also select individual components from the model.
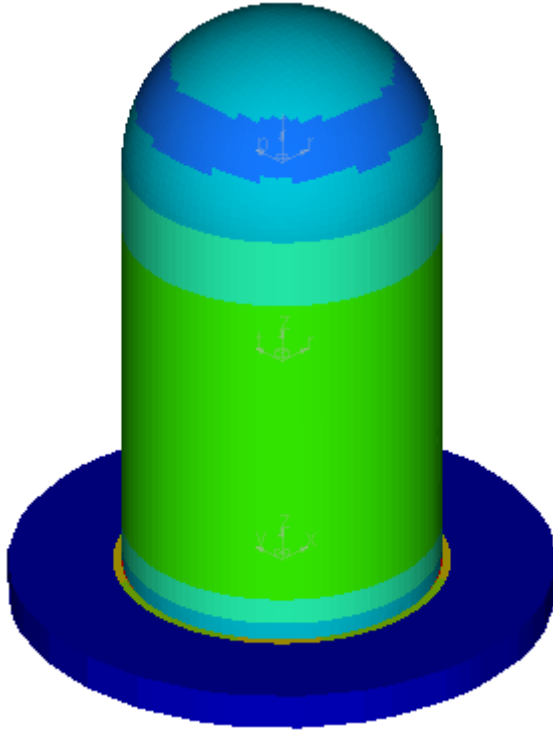

Step 3: Create a contour on specific elements using stress results.

1. Change the active input collector from **Components** to **Elements**.

2. In the graphics area, pick a few elements on the model.

3. Click *Apply*.

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4. Press the SHIFT key and the left mouse button, and drag the mouse in the graphics area, to draw a window over a specific area of the model.

    The contour is applied to the elements that were chosen using the quick window mode.

    This can be done for other entity types also.
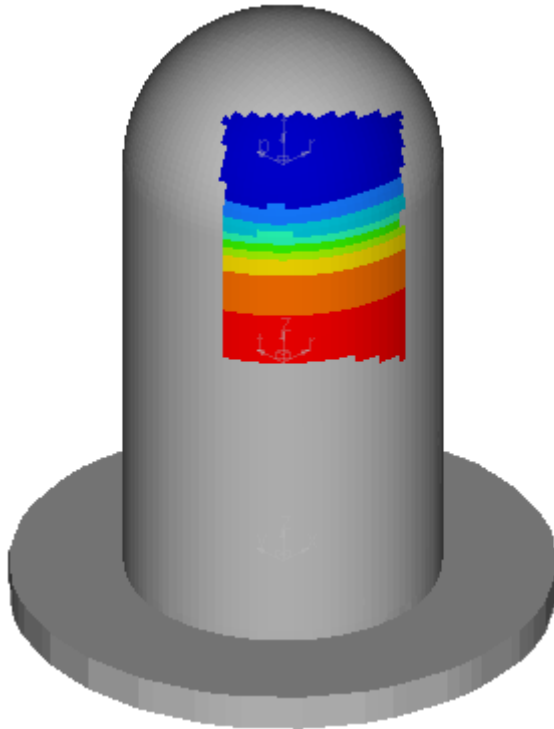
5. Under **Selection**, click on *Elements* and choose *All* from the pop up selection window.
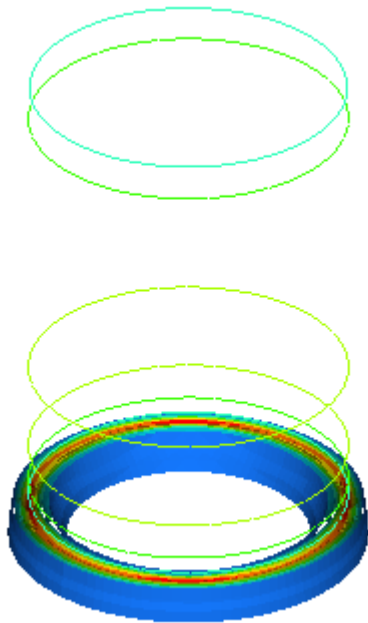
    Note   If your solver supports corner data, **Use corner data** can be activated in order to view corner results.

Step 4: Create an averaged stress contour and generate iso surfaces.

1. Change the **Averaging Method** to *Simple*.

2. Click *Apply*.

3. Click ***Show Iso Value***.

   The color bands reflect the band settings for the legend.

4. Click in the graphics area and press **'*T'*** on the keyboard.

   This allows you to view the iso surface while seeing the model in transparent mode.

5. Press **'*T'*** again to turn off transparency.

6. Click ***Clear Iso Value***.

7. Click ***Create Plot Style***.

    Creating a plot style allows you to save the current settings in the **Contour** panel so that they can be accessed later in the **Results Browser**.

8. In the **Create/Update Contour Plot Style** dialog, enter `Simple vonMises` in the **New plot style** text field and click ***OK***.
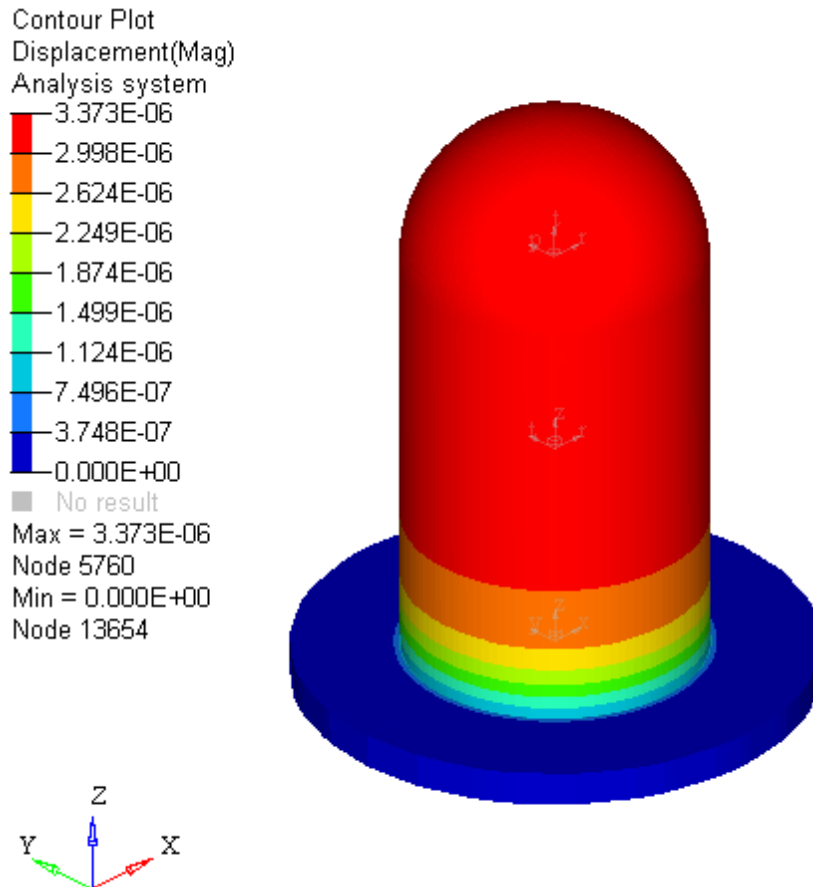
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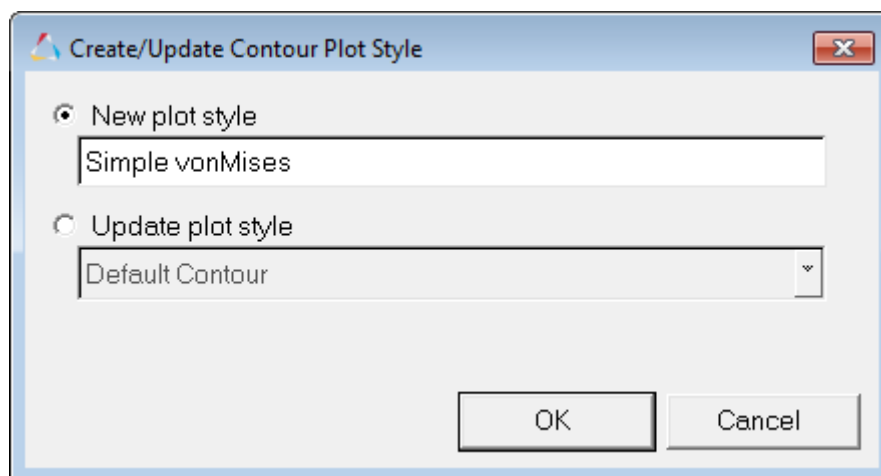
9. In the **Results Browser**, expand the **Plot Styles** folder.

   Notice that **Simple vonMises** is now listed as a plot style.
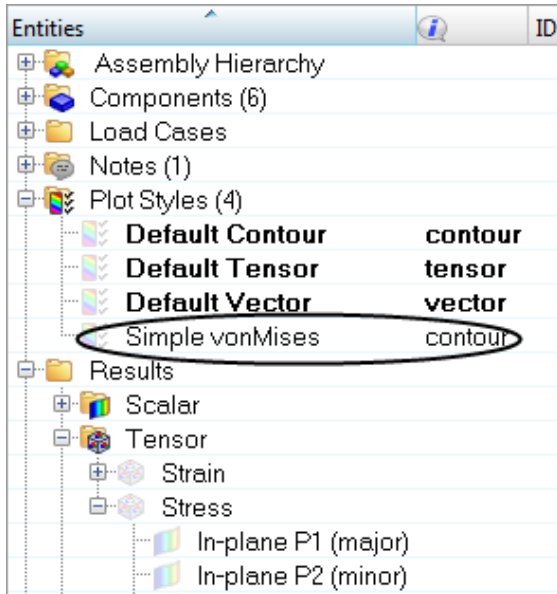
10. Click on *Default Contour* (under **Plot Styles**) to contour the model with displacement results using the default contour plot style.

   Observe the updates in the **Contour** panel.

11. Click on **Simple vonMises** (under **Plot Styles**) to return to the previous contour settings.

12. Right-click in the **Results Browser** and select **Clear Plot > Contour** to remove the contour plot.

Step 5: Contour vector and tensor results resolved in different coordinate systems.

For vector and tensor results, you can transform the results to a different coordinate system.

1. Within the **Contour** panel, select **Displacement (v)** as the **Result type** and **X** as the **Data component**.

2. Select the **Analysis** coordinate system.

3. Click **Apply**.

4. Change **Resolved in** to **Global System (proj: none)**.

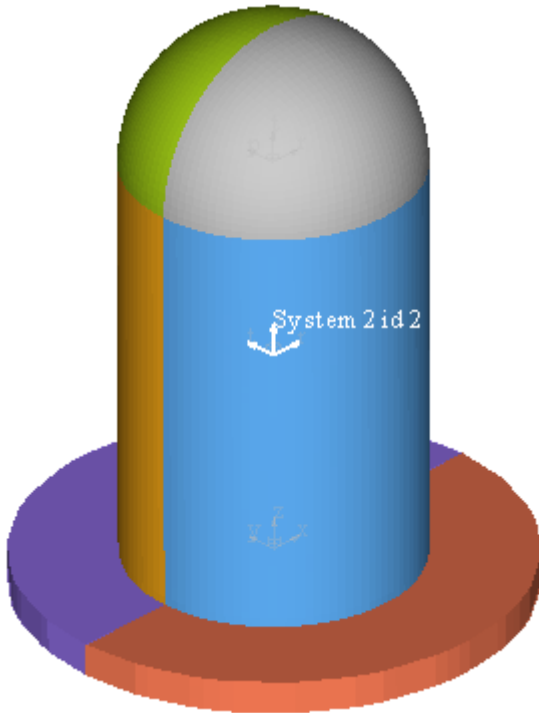5. Click **Apply**.
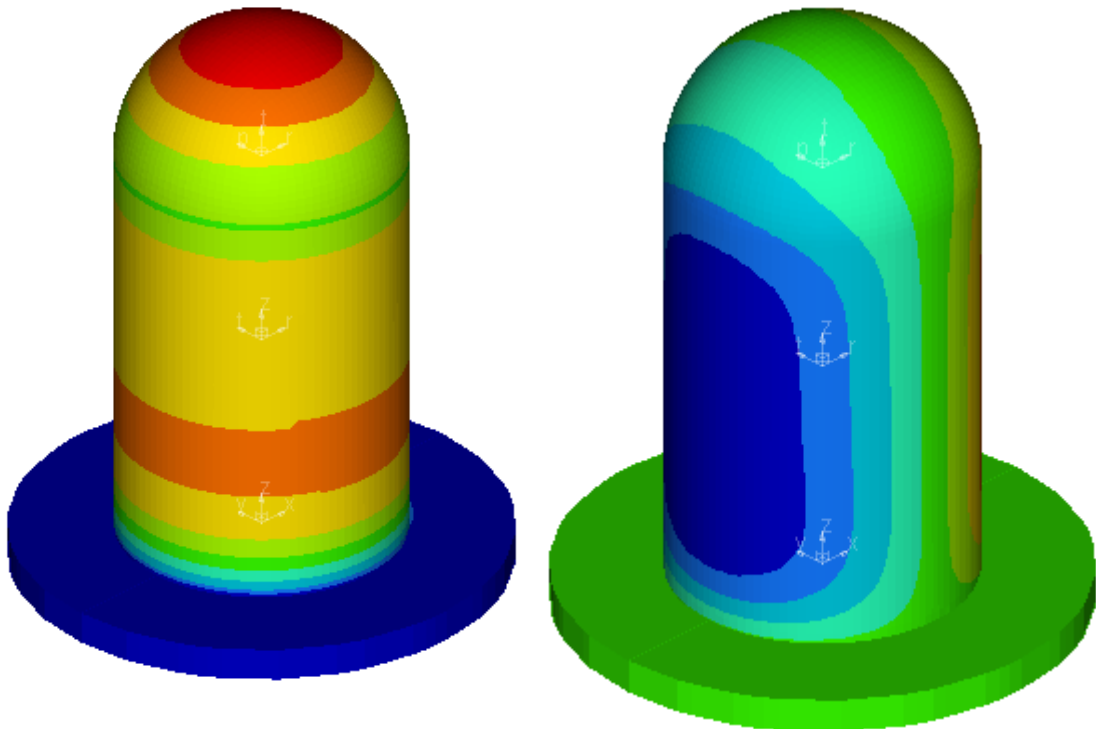
Analysis system   Global system

6. Clear the contour.

7. Change the result type to **Stress (t)** with **vonMises** as the data component.

8. Under **Resolved in** select **User System (proj: none)**.

9. Click **Projection Rule**, select **Projection (use projected axis as Sxx)**, and click **OK**.

   The current system changes to **User System (proj: x, y)**.

10. Click on *System* and then click on *By ID*.

11. Enter *'2'* to choose the second user defined system, and click *OK*.

12. Click *Apply*.

13. From the **Results Browser**, select *Simple vonMises* (located under the **Plot Styles** folder) and observe the changes.

Step 6: Edit the legend.

1. Click *Edit Legend* to open the **Edit Legend** dialog.

2. Click on *4.514E+01* and change the value to `45.0`.

   The numbers will automatically interpolate and change in the preview window.

3. Click *Apply*.

   Observe the legend changes in the graphics screen.

4. Click *Default* to return to the default settings.

5. Click *OK* to close the dialog.