



Altair

HyperWorks

Altair HyperView 2019 Tutorials

HV-3040: Viewing Vector Plots


HV-3040: Viewing Vector Plots

In this tutorial, you will learn how to:

- Use the **Results Browser** to create a vector plot
- View vector plots with displacement results
- Apply display options for vector viewing
- Create and use a **Plot Style** to be accessed in the **Results Browser**

Tools

To access the **Vector** panel:

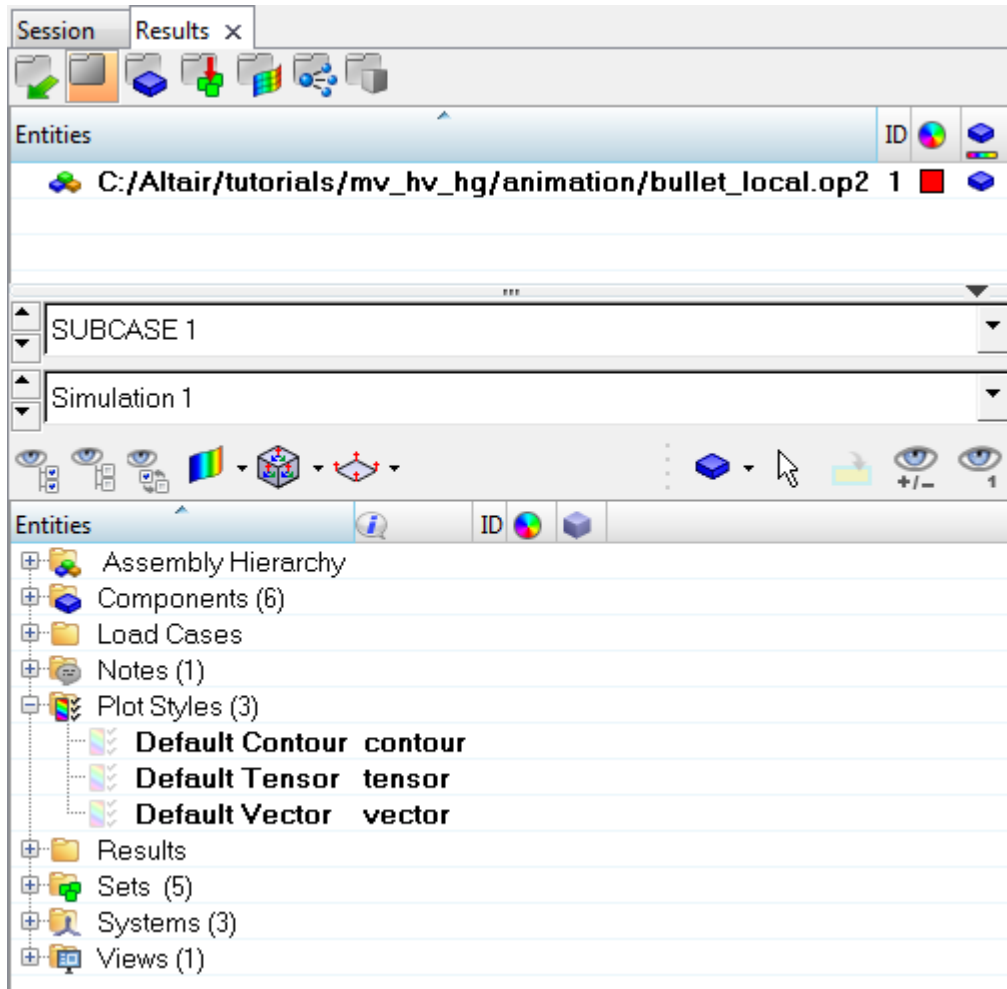
- Click the **Vector** panel button  on the **Result** toolbar.
- OR
- Select **Results > Plot > Vector** from the menu bar.



The **Vector** panel allows you to create vector plots that can be used to display any vector data associated to nodes. Examples include displacement, velocity, and acceleration.

To access the **Results Browser**:

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



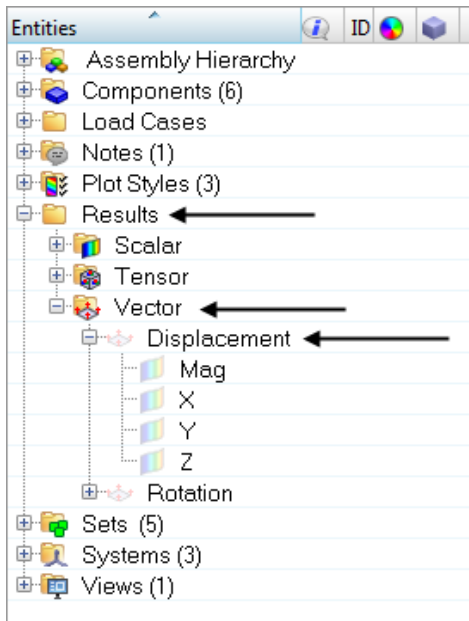
Exercise 1: Using the Vector Panel

This exercise uses the model file, `bullet_local.op2`.

Step 1: View vector by component direction 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** from the menu bar.

- Expand the **Results**, **Vector**, and **Displacement** folders.

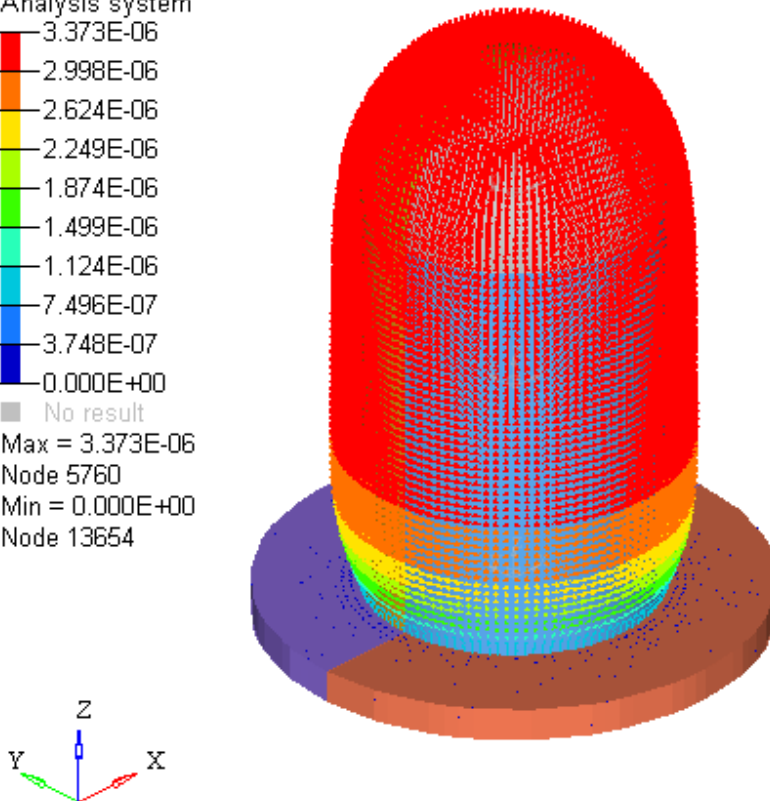


Notice that the three components, as well as the magnitude, are listed under the **Displacement** folder.


- Click on the vector icon  next to **Displacement**.

A vector plot is applied to the model in the graphics area.

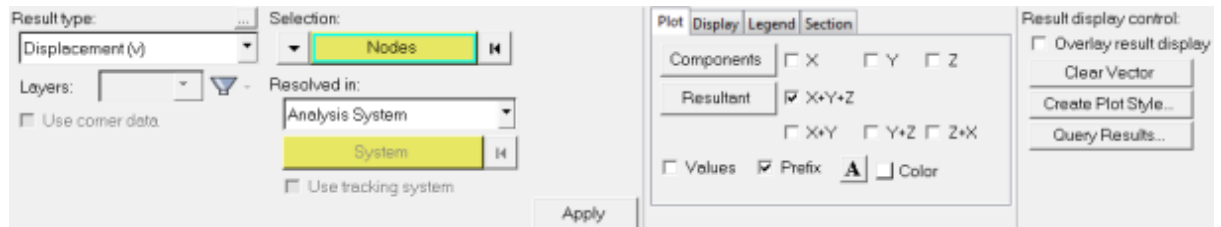
Vector Plot
Displacement(X+Y+Z)
Analysis system
— 3.373E-06
— 2.998E-06
— 2.624E-06
— 2.249E-06
— 1.874E-06
— 1.499E-06
— 1.124E-06
— 7.496E-07
— 3.748E-07
— 0.000E+00
■ No result
Max = 3.373E-06
Node 5760
Min = 0.000E+00
Node 13654



Step 2: Changing the vector plot settings using the Vector panel.

1. Click the **Vector** panel button  on the **Result** toolbar to enter the **Vector** panel.

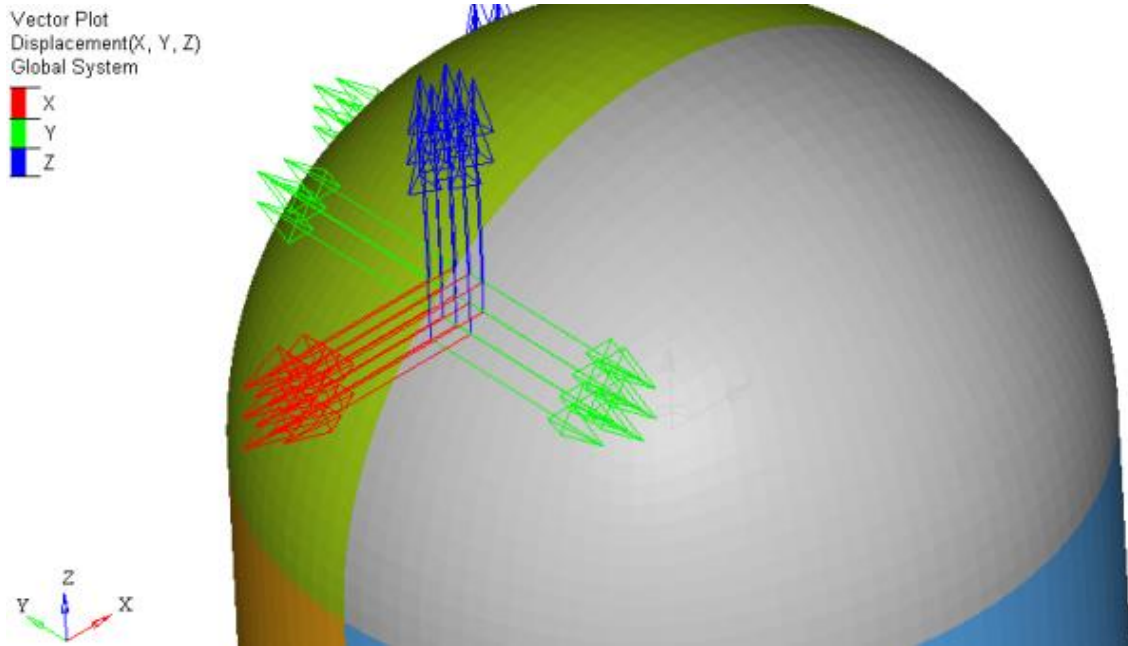
Using the **Vector** panel, additional options can be changed and applied to the vector plot.



2. Select **Displacement (v)** as the **Result type**.
3. Activate the check boxes for the **X**, **Y**, and **Z** components, and uncheck the **X+Y+Z** check box.
4. Verify that **Selection** is set to **Nodes**.
5. Change the **Resolved in** system type from **Analysis System** to **Global System**.
6. Click on the **Display** tab and specify the following:
 - For **Size scaling**, select **Uniform** from the drop-down menu and set the value to **1**.
 - For **Color by**, select **Direction** from the drop-down menu.
7. Select nodes by either of the following methods:
 - In the graphics area, pick a few nodes on the model.
 - OR
 - Use the quick window selection mode. 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.
 - OR
 - Select nodes by collector type.



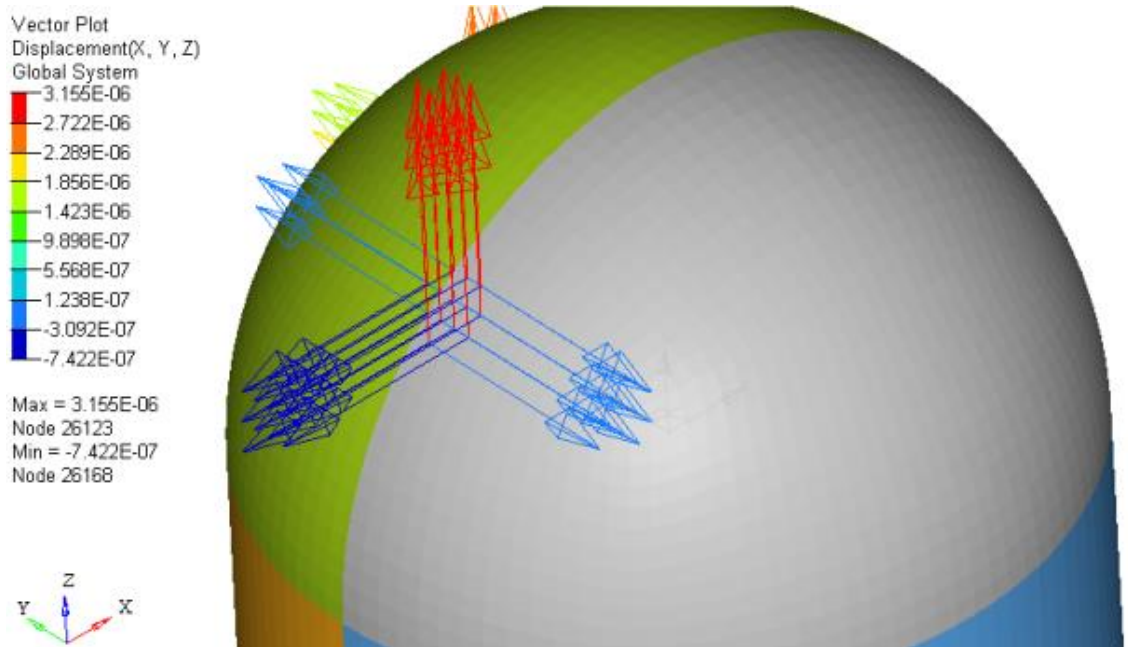
- Click **Apply** (if necessary).



Vectors based on direction

Step 3: View vector by values.

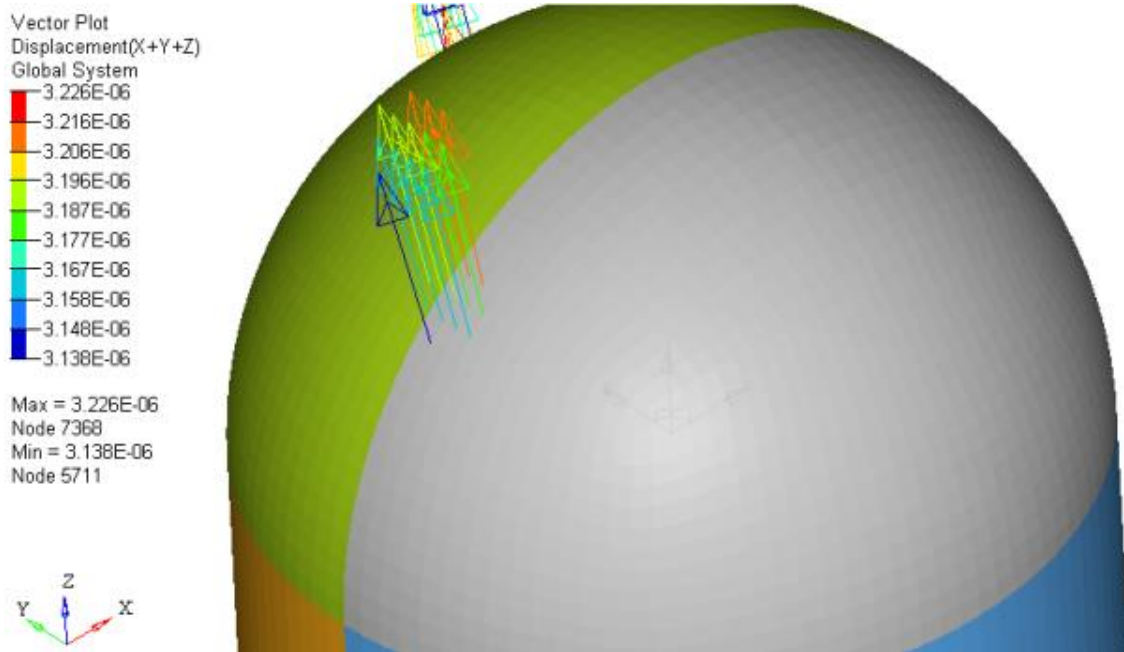
- From the **Display** tab, select **Value** for **Color by**.



Color vectors based on value

2. Click on the **Plot** tab and deselect the individual check boxes for **X**, **Y**, and **Z**.
3. Next, activate the **X+Y+Z** check box.

The vectors are displayed in resultant direction and their value corresponds to the colors in the legend.



3. Activate the **Show values** check box.

The value of the vectors are displayed in the graphics window along with the vectors.

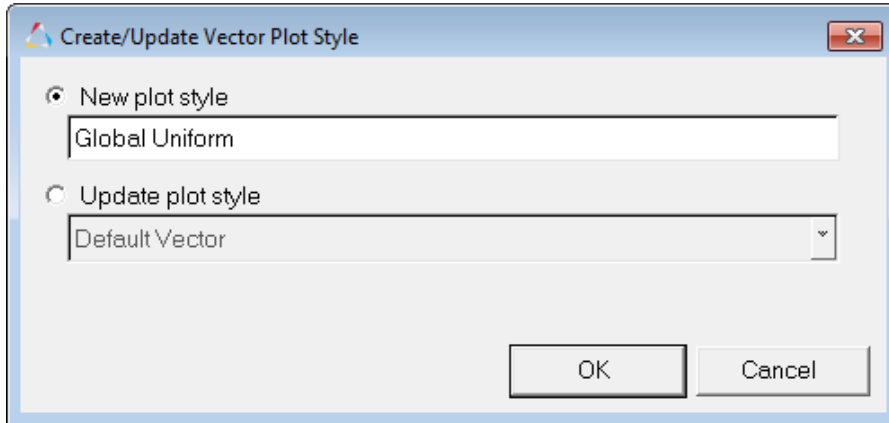
4. Uncheck the **Show values** check box.

Step 4: Create and use a Plot Style.

1. Click the **Create Plot Style...** button.

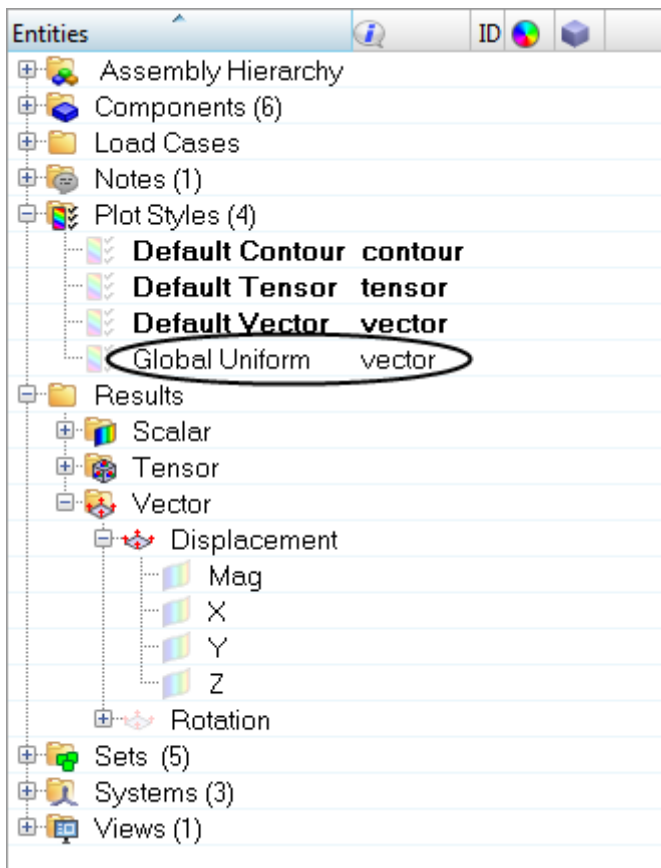
Creating a plot style allows you to save the current settings in the **Vector** panel so that they can be accessed later in the **Results Browser**.

2. In the **Create/Update Vector Plot Style** dialog, enter `Global Uniform` in the **New plot style** text field and click **OK**.



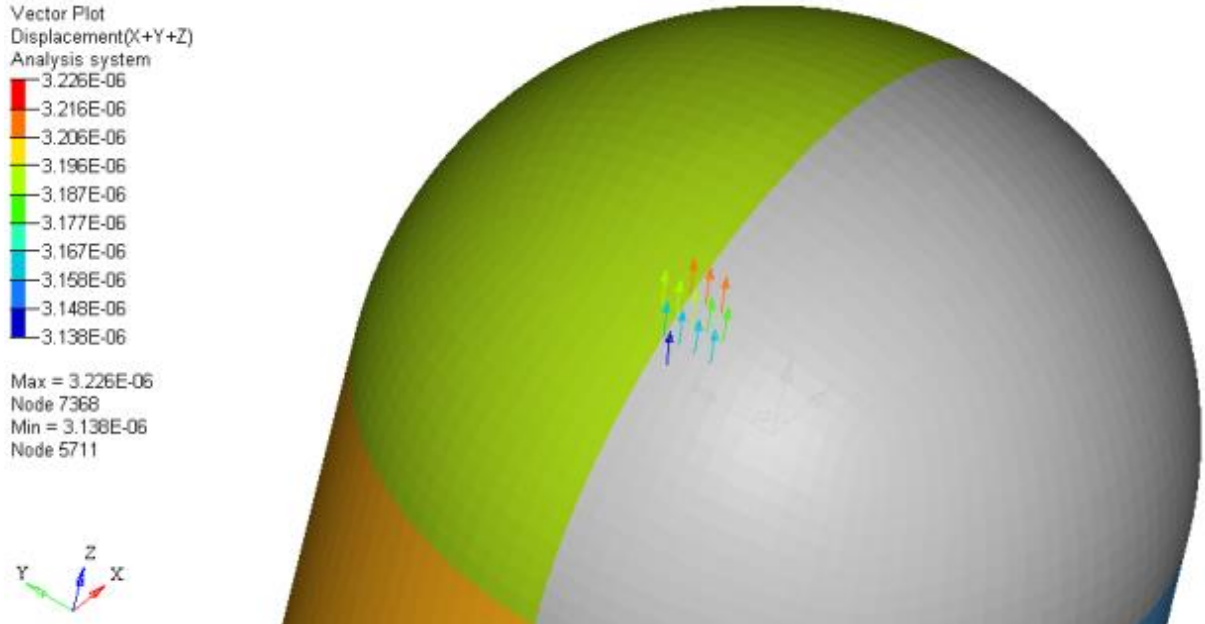
3. In the **Results Browser**, expand the **Plot Styles** folder.

Notice that **Global Uniform** is now listed as a plot style.



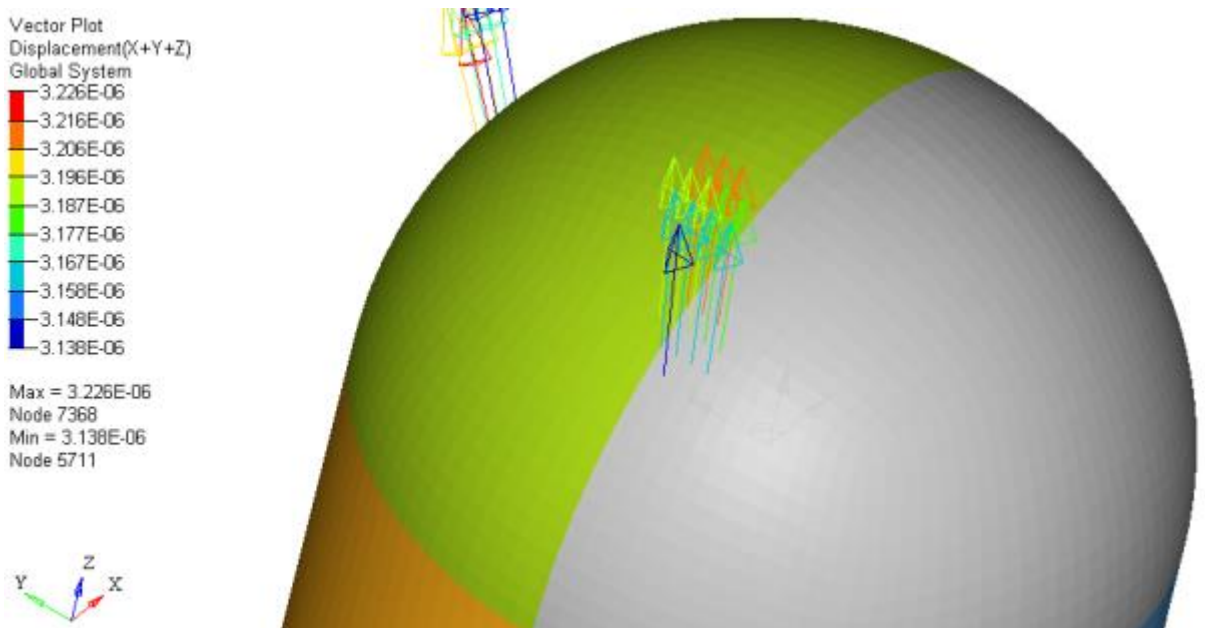
- Click on the icon next to **Default Vector** (under **Plot Styles**) to create a vector plot with displacement results using the default vector plot style.

A vector plot is applied to the model with displacement results that are **Resolved** in the **Analysis System** and are being sized using the **Auto** option.



- Click on the **Global Uniform** plot style icon to return to the previous vector plot settings (which were saved to this **Plot Style**).

The displacement results are now being **Resolved** in the **Global System** and are being shown in a **Uniform** size.



- Click **Clear Vector** in the **Vector** panel to remove the vector plot.