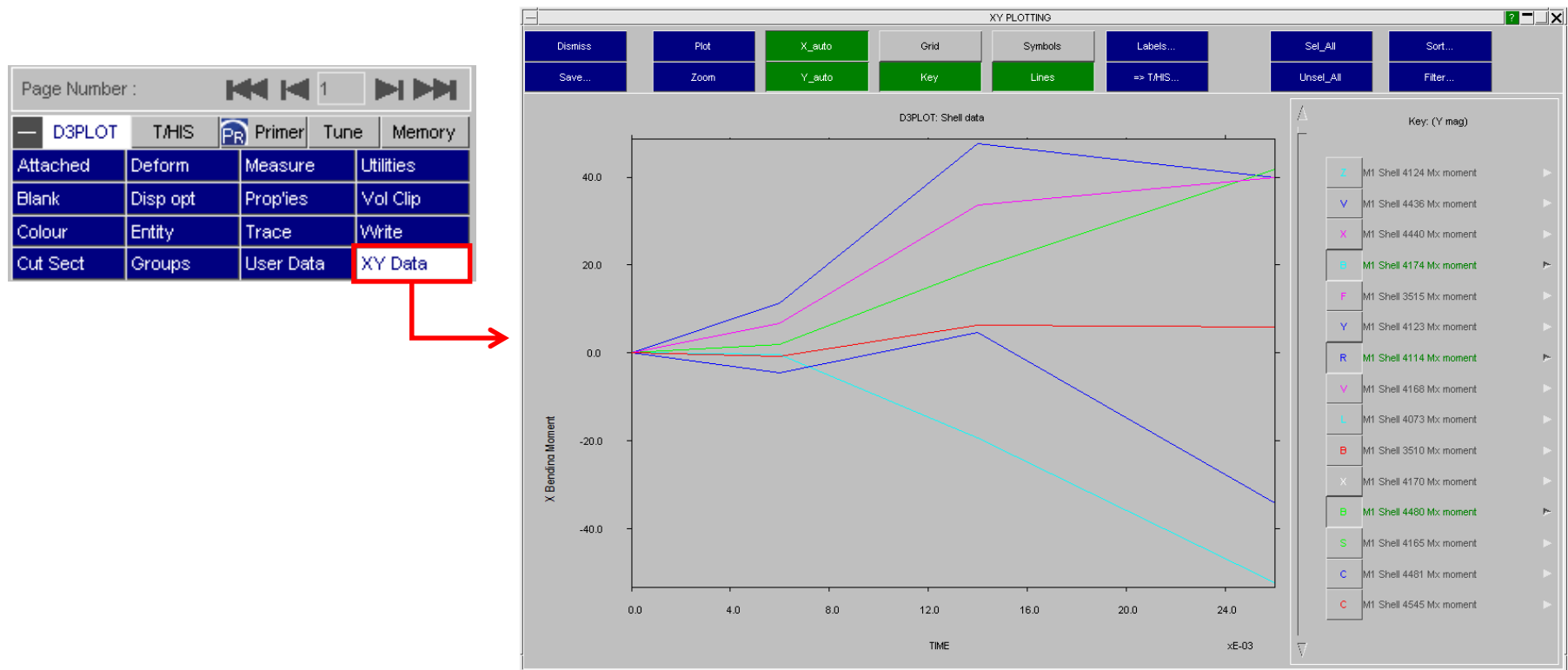


# XY Data

# About XY Data

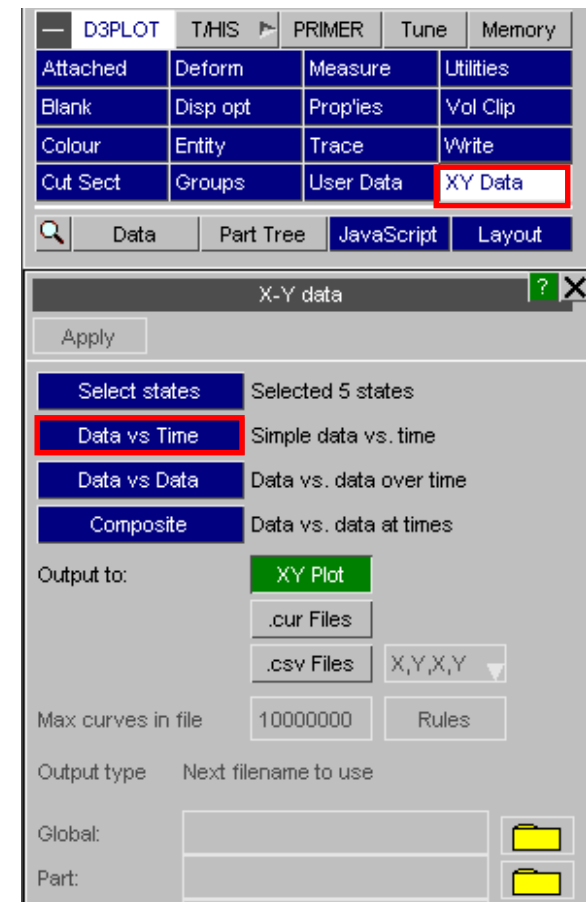
- Firstly, the 'XY Data' tool in D3PLOT allows users to plot data, such as plotting data components against time. This makes it easier to analyse via a visual representation of the data.
- Secondly, the 'XY Data' tool can be used to extract the time history data available in the D3PLOT (.ptf) file. This is useful if further data is required which is not in the output T/HIS (.thf and binout) files.



## Data vs. Time – Worked Example

The '**Data vs Time**' option within the '**XY Data**' menu plots time history (using D3PLOT data) for model entities such as nodes and elements. For example, displacement vs. time for three shells.

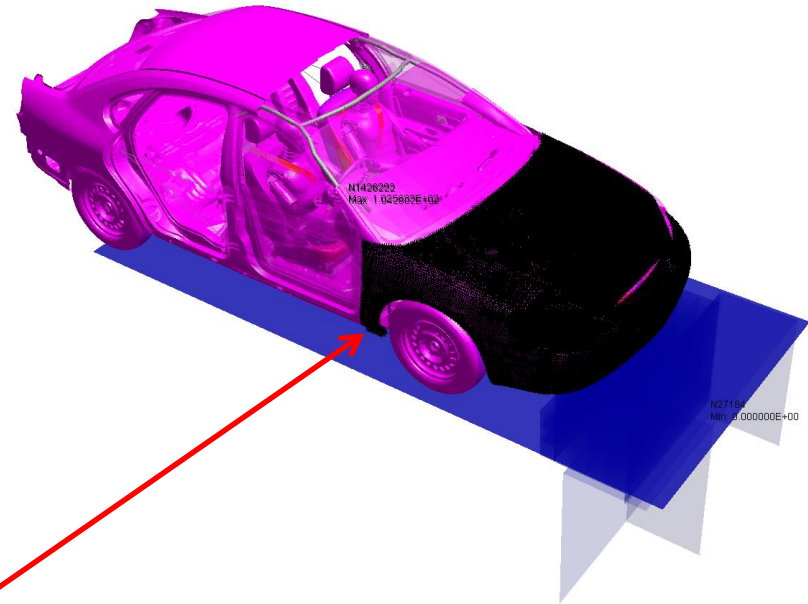
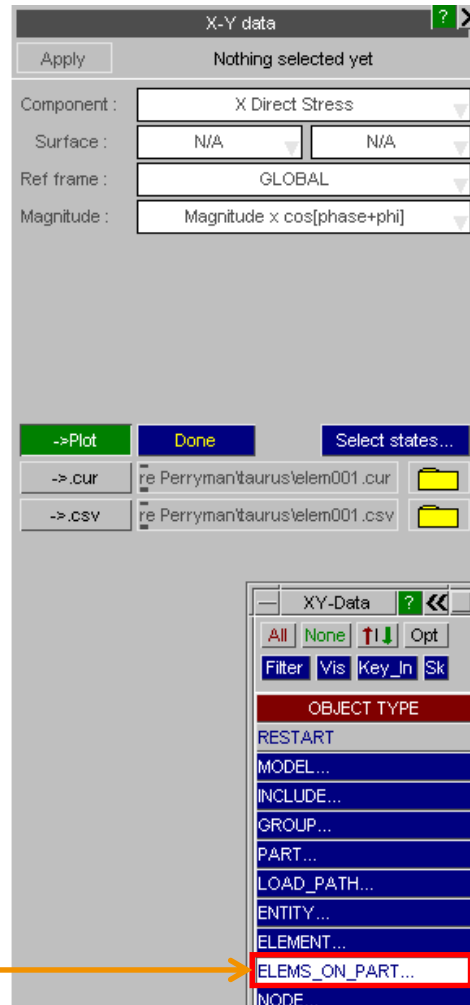
The data can be output to screen and/or a file.



# Data vs. Time – Worked Example

(1) Select objects for which data is to be plotted.

Either by selecting from the object menu, or, as in this example, screen-picking by dragging out an area, or picking each object separately, or by using Key\_In to enter the ID.

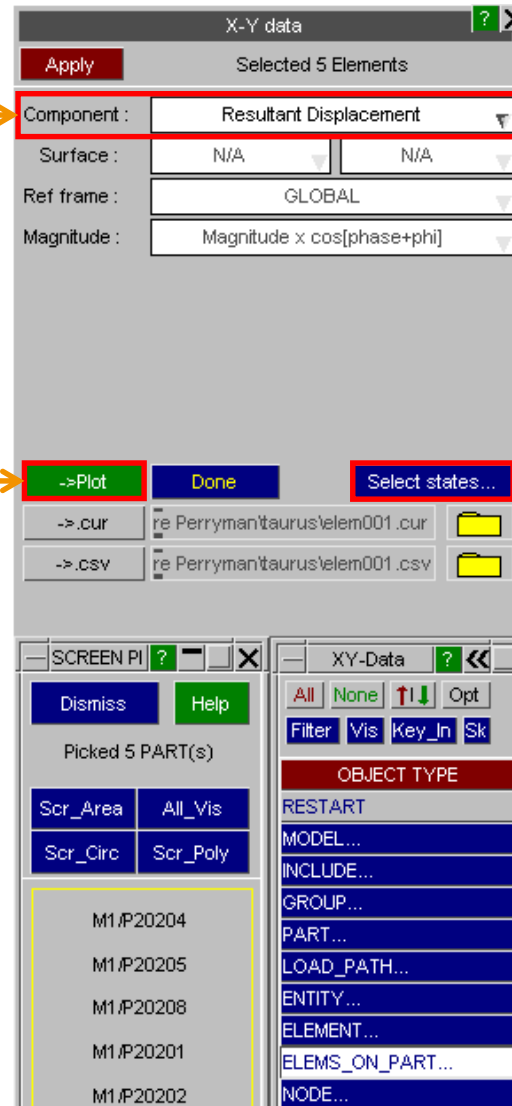


## Data vs. Time – Worked Example

(2) Select the data component required to plot.

To display on screen: ensure that the “->Plot” button is green.

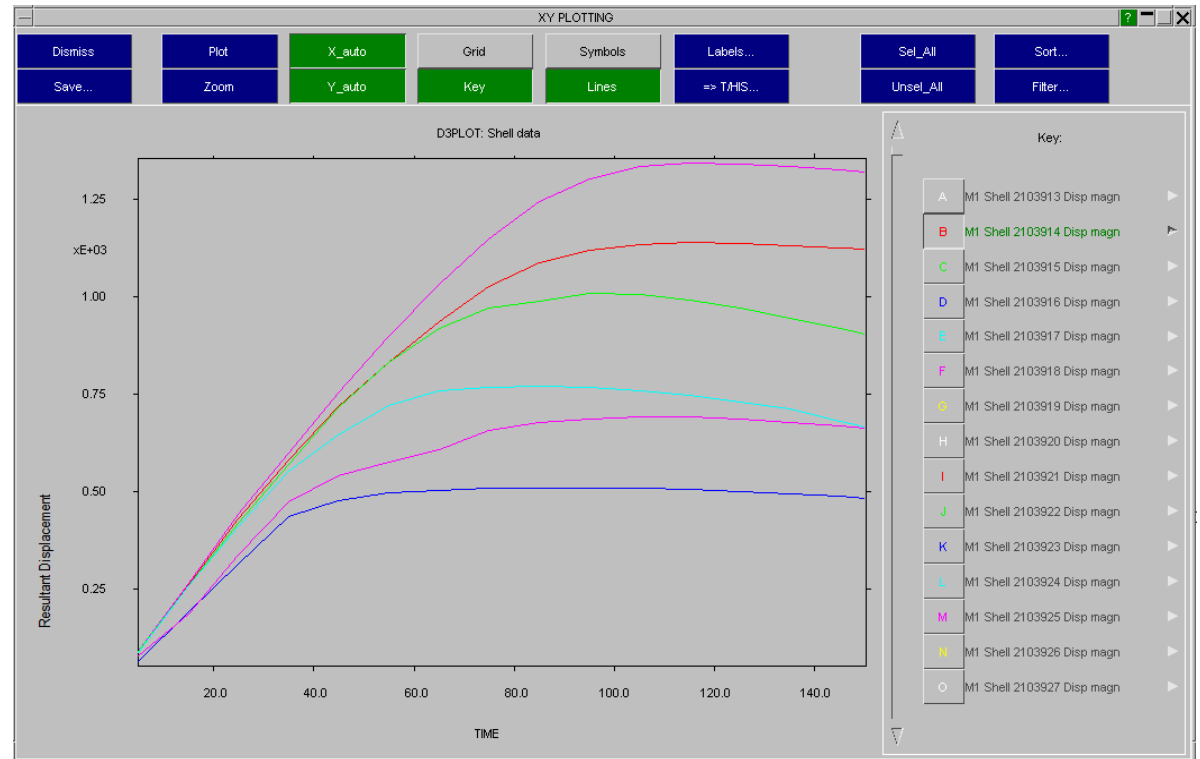
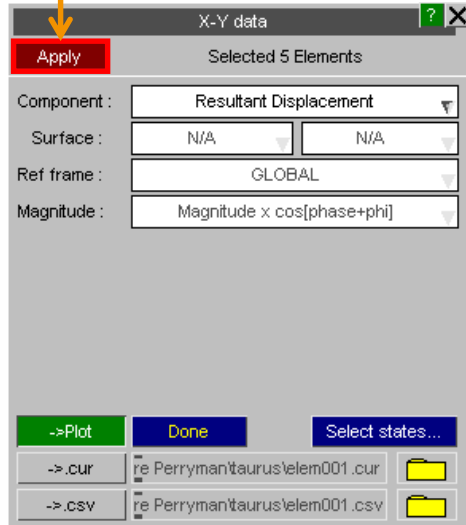
To output a file: ensure that the “->.cur” or “->.csv” buttons are green.



Optionally select time states for output.

# Data vs. Time – Worked Example

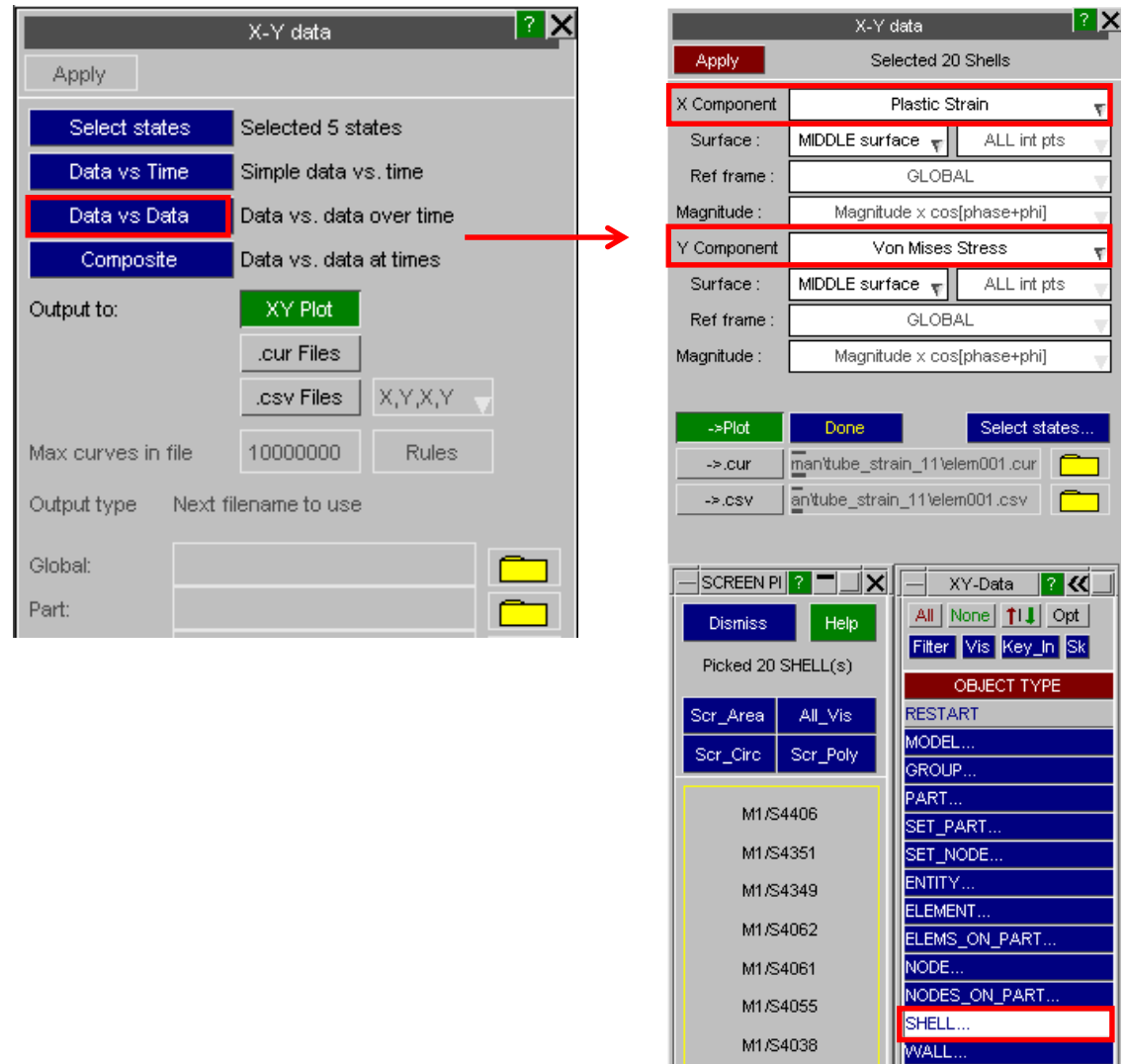
(3) Click the 'Apply' button to display the graph.



# Data vs. Data

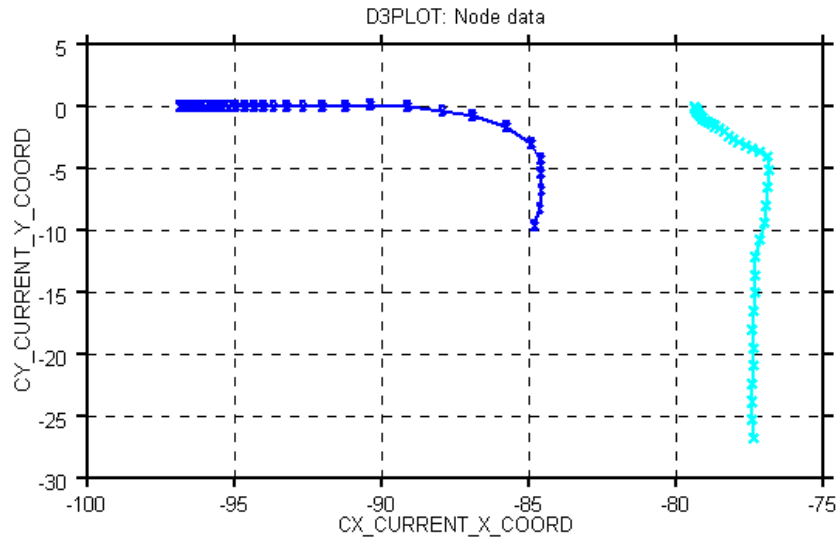
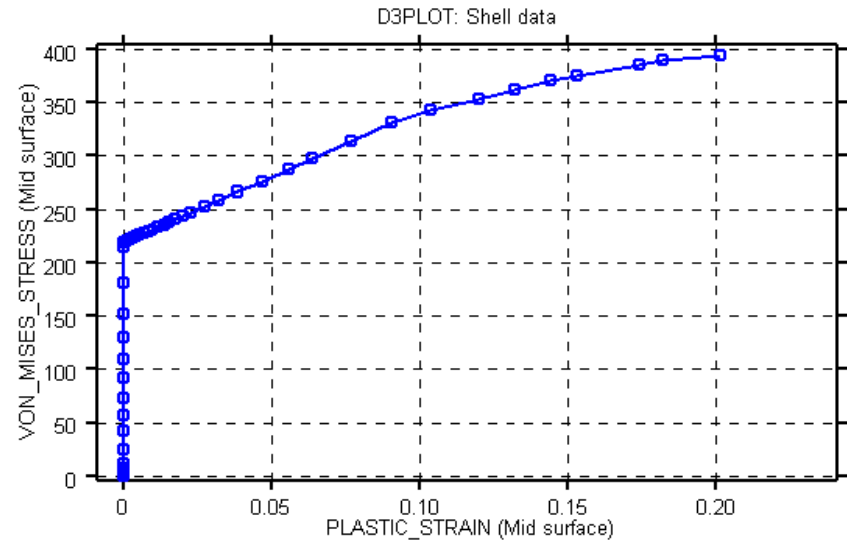
The 'Data vs Data' option within the 'XY Data' menu allows two data components to be plotted against each other over time, such as von Mises stress vs. plastic strain.

A curve is written for each selected entity (node, element, etc), with each point on a curve representing one time state.



# Data vs. Data - Examples

von Mises stress vs. Plastic strain



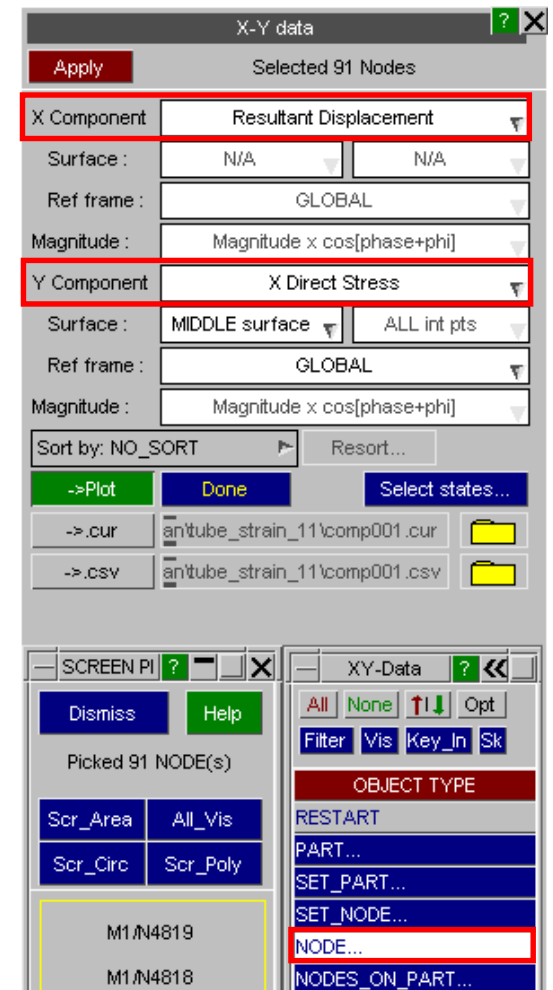
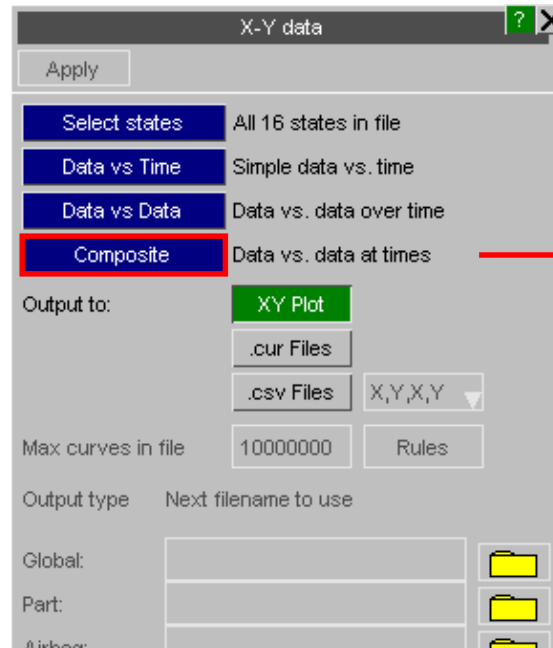
Trajectory of nodes



# Composite

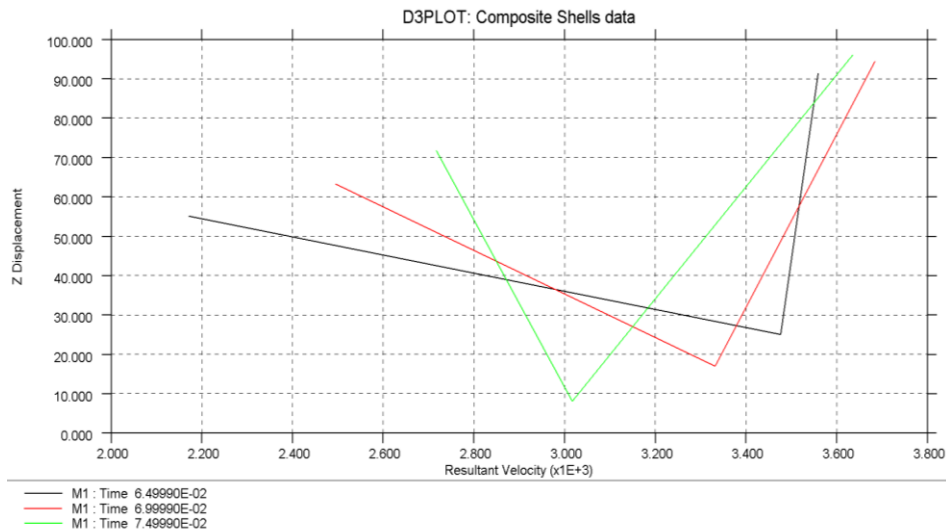
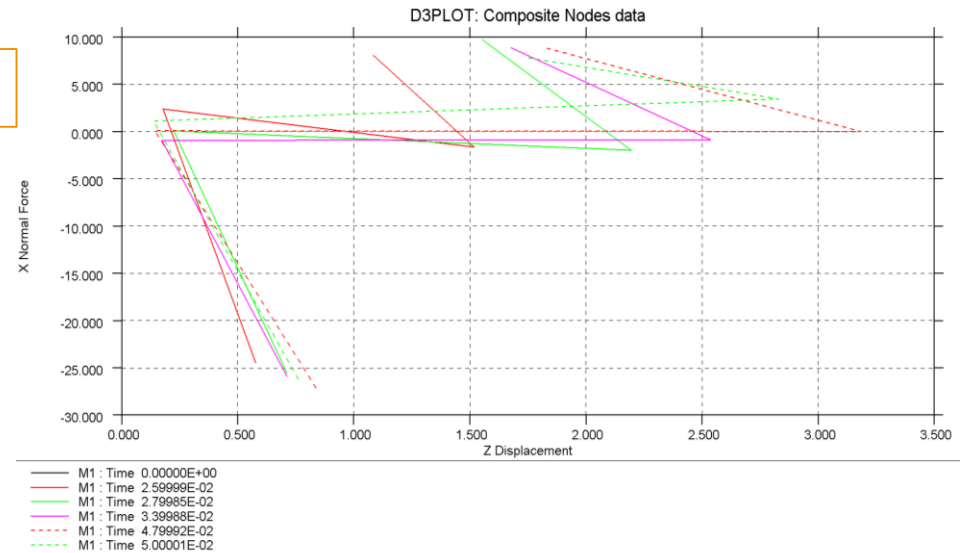
The 'Composite' option, within the 'XY Data' menu, allows two data components to be plotted against each other, with one curve for each time state and one point on each curve for each selected entity.

The order in which the entities are selected is important, and can be sorted, see later slide.



# Composite - Examples

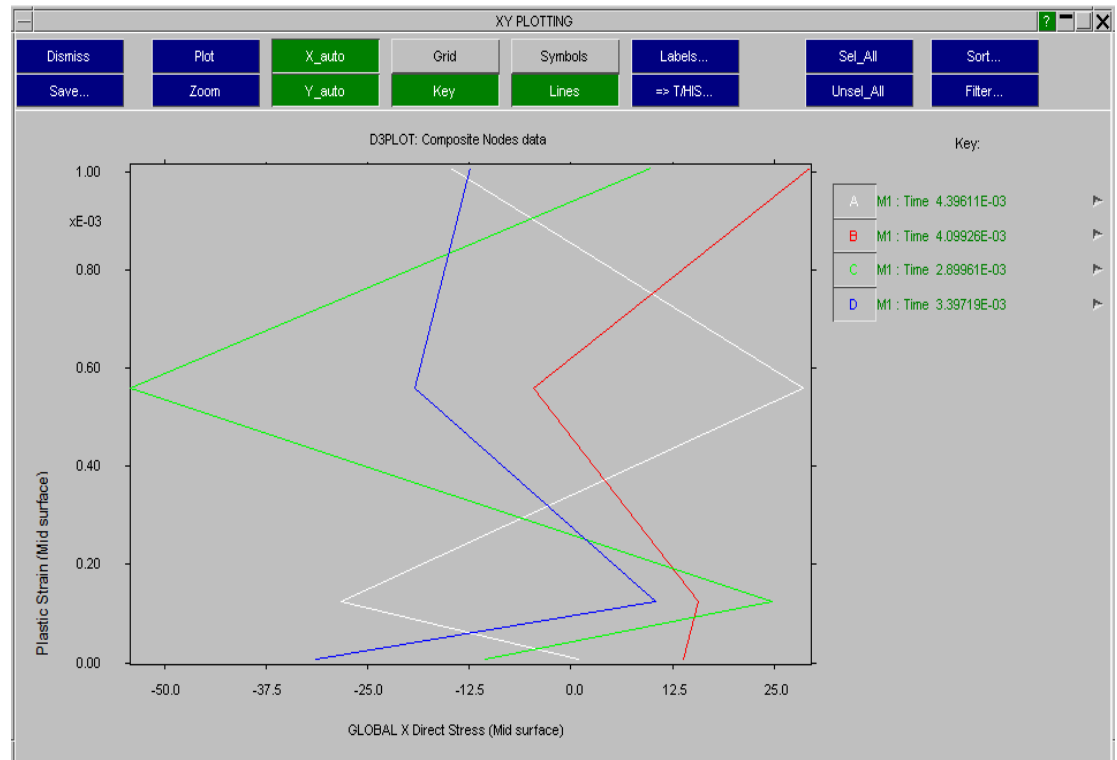
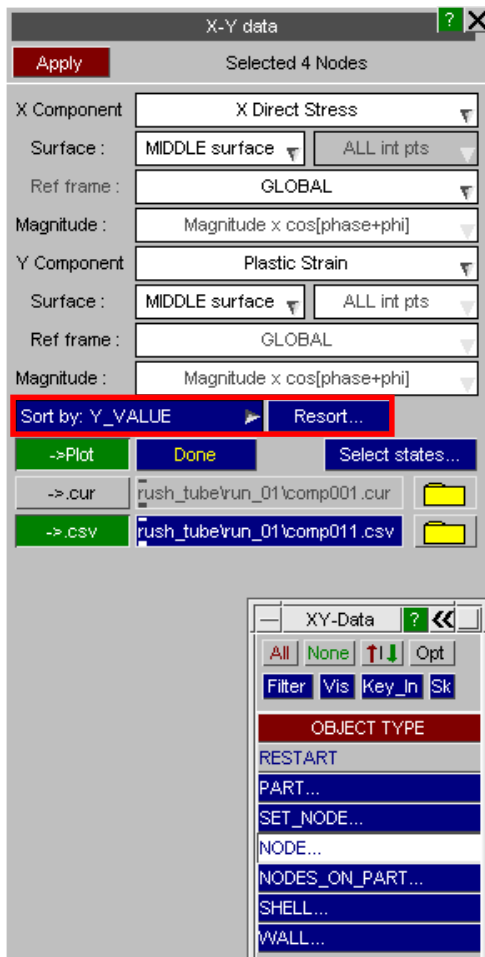
## Force vs. Displacement for nodes



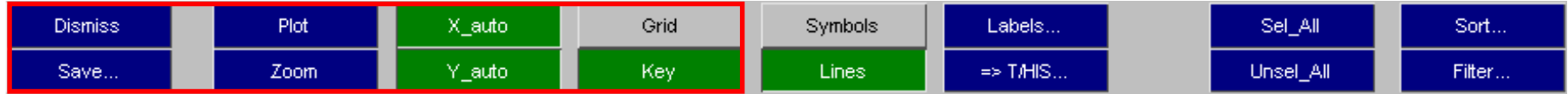
## Velocity vs. Displacement for shells

# Composite – Resort function

By default, no sorting takes place of the XY Data points displayed on the graph. The 'Resort' function allows the data points to be sorted in a variety of ways, e.g. by y-value.



# XY Plotting Functions



- **Dismiss** – closes the XY plotting window. Data is left unchanged on backing store.
- **Save** – writes the currently selected curves to ‘curve’ or ‘csv’ files.
- **Plot** – redraws the current graph with the curves selected for plotting (can also be considered as a refresh button to update the graphics on the graph).
- **Zoom** – uses the mouse cursor to zoom in on an area. Both X and Y scales become set explicitly (taken out of automatic mode).
- **X\_auto** – switch auto scaling for the X axis on/off.
- **Y\_auto** - switch auto scaling for the Y axis on/off.
- **Grid** – toggle the grid at the tick marks on/off.
- **Key** – toggle the curve labels labelled “Key” (situated to the right of the graph) on/off.

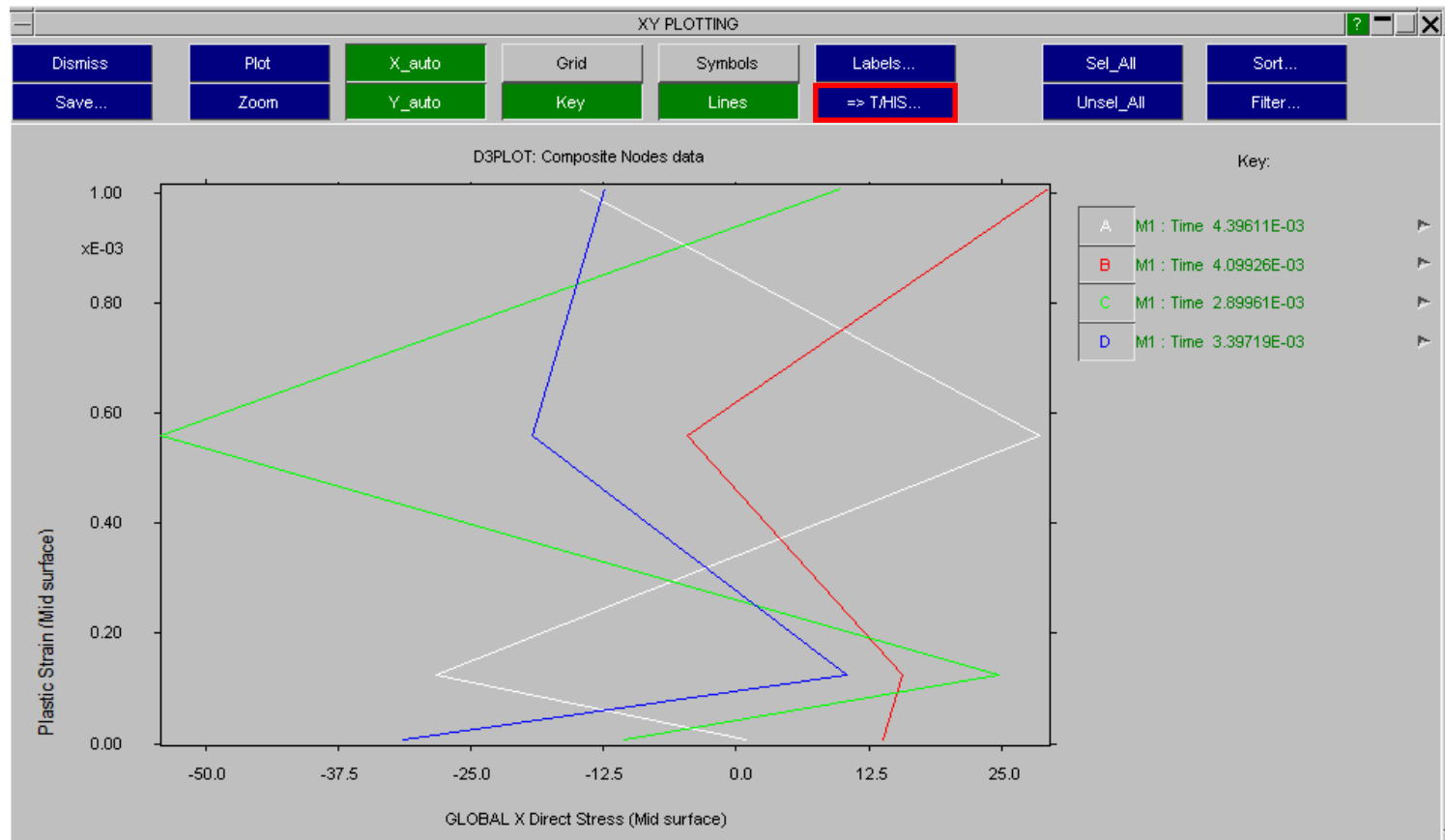
# XY Plotting Functions



- **Symbols** – toggle the display of symbols (letters) at points on/off.
- **Lines** – toggle the lines between points on/off.
- **Labels** – edit the graph title and axis titles.
- **=> T/HIS** – copies selected curves to T/HIS using the T/HIS link within D3PLOT. See following slides for more detail.
- **Sel\_All** – selects all curves for plotting.
- **Unsel\_All** – deselects all curves for plotting.
- **Sort** – choose the order of appearance of the curves listed in the 'Key' (situated to the right of the graph) from a range of predefined options.
- **Filter** – filter the curves by colour and/or letter.

# Exporting to T/HIS

Curves can be exported to T/HIS for further processing. This can be done either by writing curve files and reading into a separate session of T/HIS, or starting the T/HIS link directly from the XY plotting panel by pressing the '**=> T/HIS**' button. The option is then given to either export all curves or only selected curves.



## Contact Information



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