Metric Compute Confidence Ellipse

Overview

The **Metric Compute Confidence Ellipse** command can be used to compute the 95 % confidence ellipse in 2 or more dimensions. This is the smallest ellipse that will cover 95 % of the data points.

Can also be used to compute the area or volume of an ellipse based on PCA. Does not require all vertices to be present for all frames. It can be found within the **Pipeline Workshop** under **Metric**.

Pipeline Command

The syntax for the function is as follows:

```
Metric_Compute_Confidence_Ellipse
/SIGNAL_TYPES=
! /SIGNAL_FOLDER=ORIGINAL
! /SIGNAL_NAMES=
! /COMPONENT_SEQUENCE=
! /RESULT_FOLDER=PROCESSED
/RESULT_NAME=
! /EVENT_SEQUENCE=
! /EXCLUDE_EVENTS=
! /START_FRAME=
! /END_FRAME=
;
```

Command Parameters

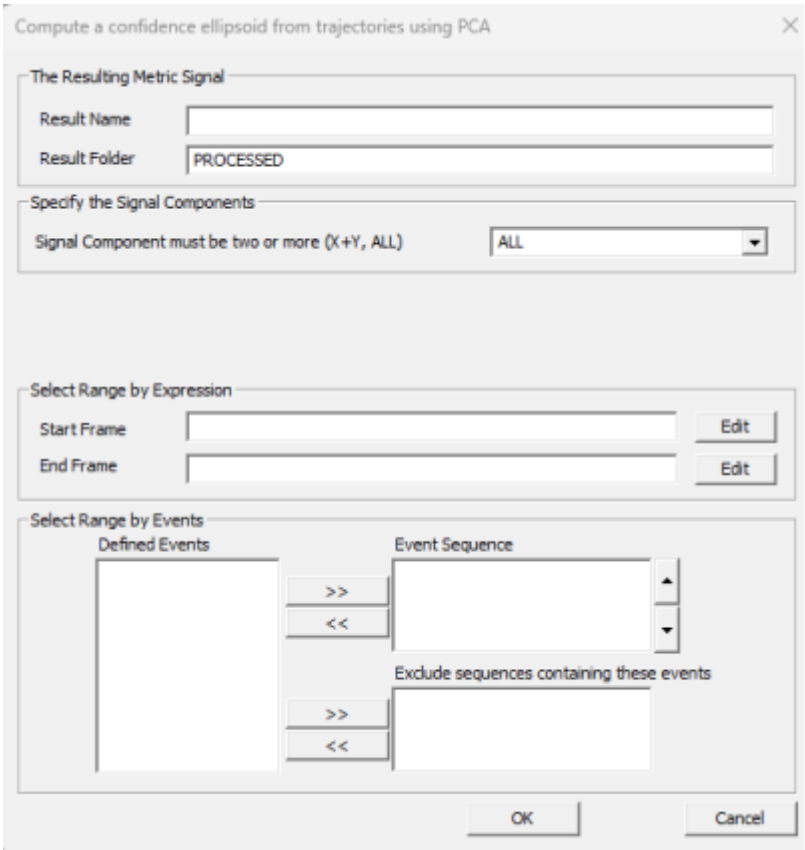
The Parameters for the function are as follows:

/SIGNAL_TYPES=	**Specify signal type**
/SIGNAL_NAMES=	**Specify signal name**
/SIGNAL_FOLDER=	**Specify signal folder**
/COMPONENT_SEQUENCE	**Which component of the signal will be used for statistical analysis of the sequence.**
/RESULT_FOLDER	**Name of folder holding resulting processed data**
/EVENT_SEQUENCE=	**Specify the sequence of Events. Any number of Events can be entered (separated by +). This specific sequence of events must be true for a metric to be computed. The metric is computed from the first event in the sequence to the last event in the sequence**
/EXCLUDE_EVENTS=	**If this event occurs before the first and last event, do not compute a metric**

/START_FRAME=	**The frame at which to start recording data.**
END_FRAME=	**The frame at which to stop recording data.**

Dialog

The command can be edited in a text editor or in a dialog form. To edit in the dialog pop up form either click on the **Edit** button in the pipeline workshop or double-click on the pipeline command. The dialog is shown below.



The dialog box allows you to assign values to the command parameters outlined above.

Example: Computing Confidence Ellipse for COFP

In this example the **Metric Compute Confidence Ellipse** command is used to compute the values associated with the confidence ellipse for left and right COFP during a balance trial. This analysis can be useful to compare balance consistency between sides using ellipse areas.

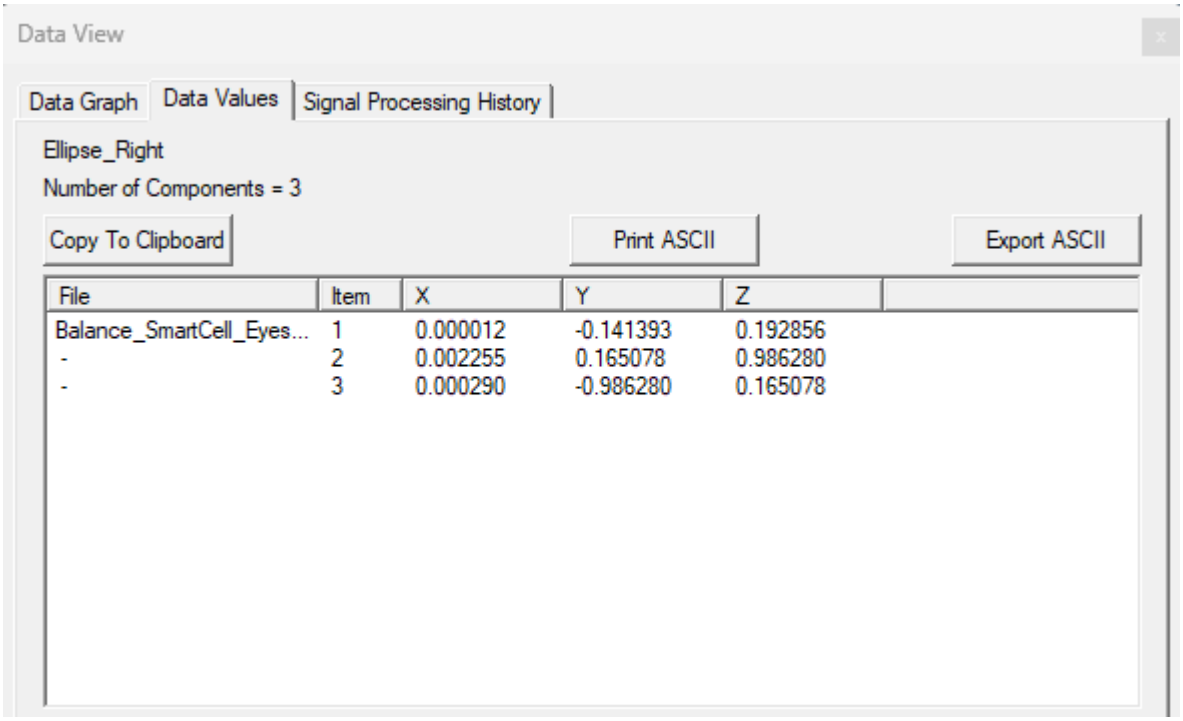
The pipeline command for each side is:

```
Metric_Compute_Confidence_Ellipse
/SIGNAL_TYPES=COFP
! /SIGNAL_FOLDER=ORIGINAL
/SIGNAL_NAMES=FP3
/COMPONENT_SEQUENCE=X + Y
! /RESULT_FOLDER=PROCESSED
```

```
/RESULT_NAME=Ellipse_Right
/EVENT_SEQUENCE=START+END
! /EXCLUDE_EVENTS=
! /START_FRAME=
! /END_FRAME=
;

Metric_Compute_Confidence_Ellipse
/SIGNAL_TYPES=COFP
! /SIGNAL_FOLDER=ORIGINAL
/SIGNAL_NAMES=FP4
/COMPONENT_SEQUENCE=X + Y
! /RESULT_FOLDER=PROCESSED
/RESULT_NAME=Ellipse_Left
/EVENT_SEQUENCE=START+END
! /EXCLUDE_EVENTS=
! /START_FRAME=
! /END_FRAME=
;
```

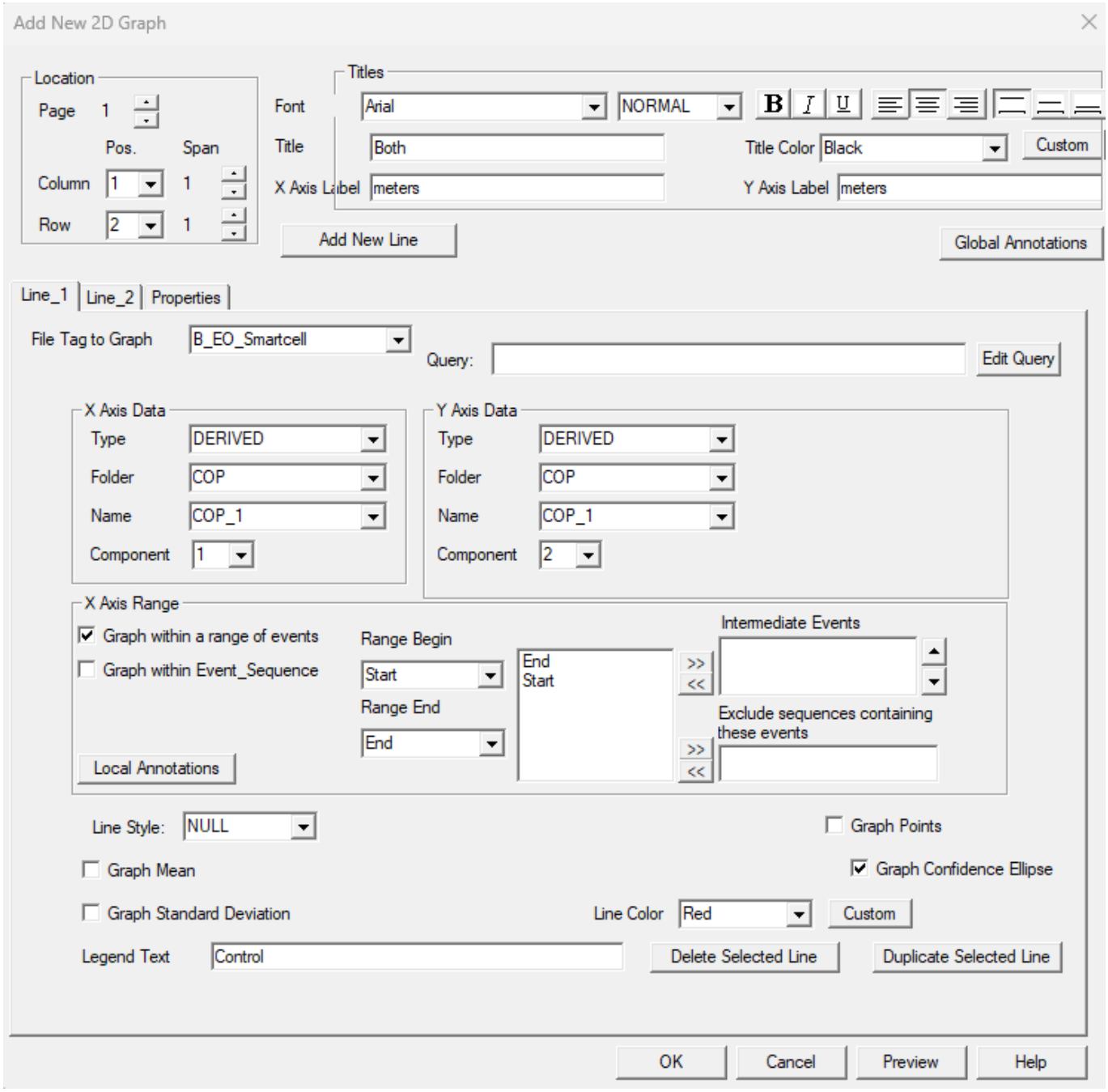
The resulting metric is found in the **METRIC:PROCESSED** folder and should look similar to below.



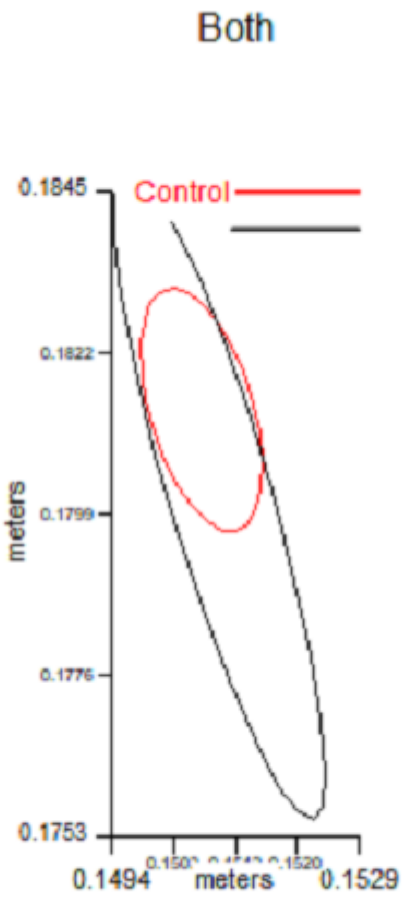
The metric for this example contains 3 components, with 3 values for each component.

The ellipse can also be visualized in the reports tab:

Add a new 2D Graph to your report with the appropriate X and Y data and make sure to select **Graph Confidence Ellipse**.



The resulting graph should look similar to this:



Notes

For more information see

Resulting Signal

Frame 1 contains volume and average value

Starting at frame 2

one frame for each dimension containing the eigenvalue and eigenvector (e.g. scale and unit vector)