

Tips on Technical Graphics with Synopsys Optical Solutions Tools

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Introduction

Effectively communicating technical information is a key part of any engineering and scientific field. In this article, you'll learn tips on preparing your simulated results for presentations, assignments, and other publications to improve their readability, and get your message across.

Tips will be covered for CODE V, LightTools LucidShape, and RSoft Photonic Device Tools.

CODE V

Graphical output from CODE V options appear in output windows. Copying this output from CODE V into your report is easy! Depending on the analysis type, the output window will have a toolbar with various choices for you to edit the way your output is presented.

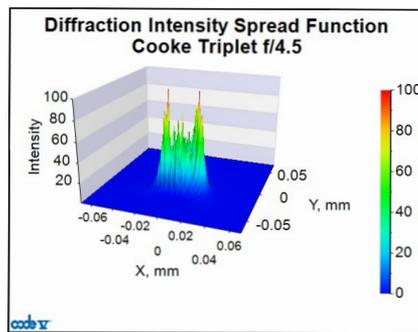


Figure: CODE V Point Spread Function chart

Every chart has a button to copy the output to the clipboard, which can then be pasted into your report. In options such as MTF and Point Spread Function (PSF), the button is a dropdown with "Copy to Clipboard". In other options, such as spot diagrams (SPO) and ray aberration curves (RIM), a "Copy" button is available.

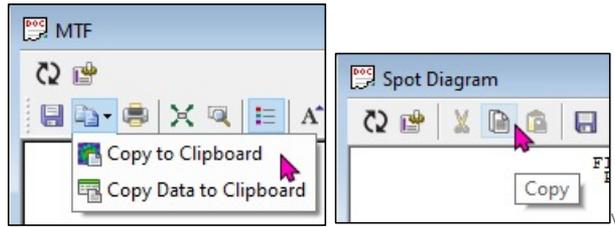


Figure: Copying charts from CODE V's MTF option and Spot Diagram option

Analysis options such as MTF and PSF have buttons to increase font size and line width to aid you in making your output more legible when pasted into results. There is even an "Apply Presentation/Report Template" button to quickly prepare the chart for presentations:



Figure: Controls to adjust chart font size, line width, and switch to "Apply Presentation/Report Template"

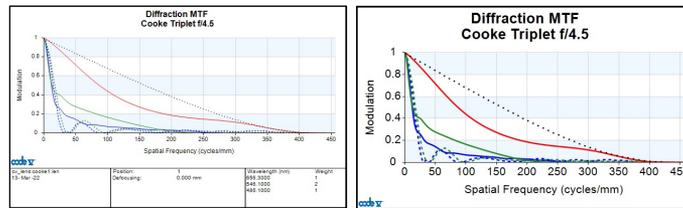


Figure: MTF chart copied using the default MTF template (on left), and Presentation/Report settings (on right). Notice the text in the chart on the right is easier to read.

For more extensive chart customizations, you can press the Chart Properties button to access controls for chart colors, axes scales, and more.

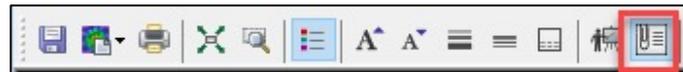


Figure: Some options have a toolbar button to customize chart properties further

Right click on the chart to save the property settings as a template to use later, or apply the settings to all similar charts in the window.

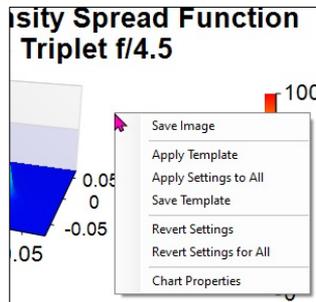


Figure: Right clicking on a chart gives you options to apply and save templates, apply settings to all charts in the window, and revert settings back to the default

For charts that don't have editable properties, such as spot diagrams and ray aberration curves, you can extract the components in Microsoft products and edit the picture:

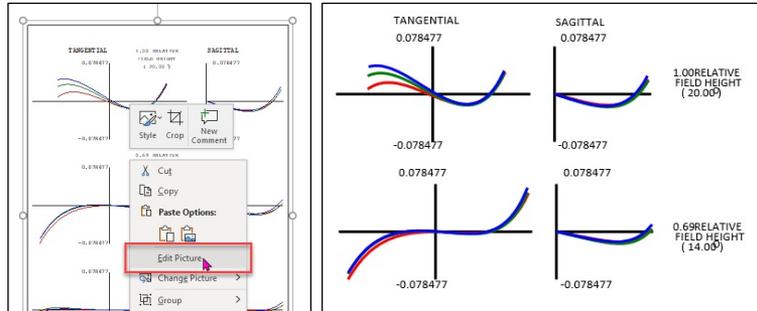


Figure: Copy of a RIM curve in Microsoft Powerpoint. Right click to edit the picture (left). Example of edited picture after adjusting font and line sizes (right)

The edited picture becomes a Microsoft drawing object. These objects can then be ungrouped and moved/modified independently.

LightTools

Graphical output from LightTools analysis can be accessed from the Analysis menu and choosing the metric you'd like to assess (illuminance, intensity, luminance, etc.). The main output is to present illumination metrics using the LumViewer, but there are also other types of analysis for color charts, polarization, and more. Each chart has a toolbar to help you customize how the analysis is presented.

Copying charts from the LumViewer is easy! Right click on the copy icon and choose "Copy to Clipboard". You can then paste the chart into your document.

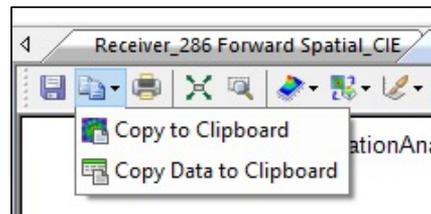


Figure: LumViewer's "Copy to Clipboard"

You can make text more readable by adjusting the font size up and down.



Figure: In the LumViewer toolbar, you can adjust text font size

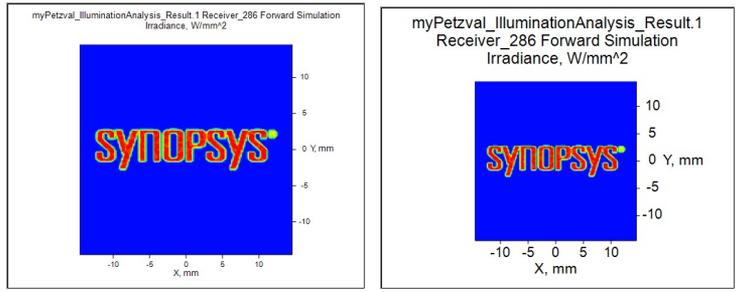


Figure: Irradiance LumViewer plot copied with default settings (on left), compared to chart copied after increasing the font size to be more readable.

For more extensive chart customizations, you can press the Chart Properties button to access controls for chart colors, axes scales, and more!



Figure: Analysis options have a toolbar button to customize chart properties further

Right click on the LumViewer to save the property settings as a template to use later, or apply the settings to all similar charts.

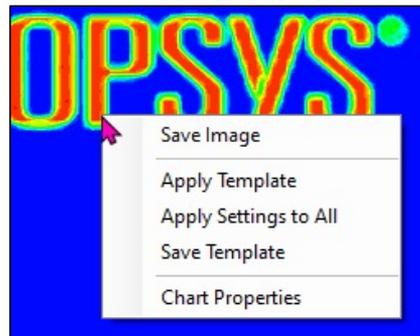


Figure: Right clicking on a LumViewer chart gives you options to apply and save templates and apply settings to all charts in the window.

For luminance measurements, you can overlay forward simulation results directly on the associated geometry in the V3D window. To enable this setting, go to the **View menu > Simulation Results** and choose **True Color** or **False Color**.

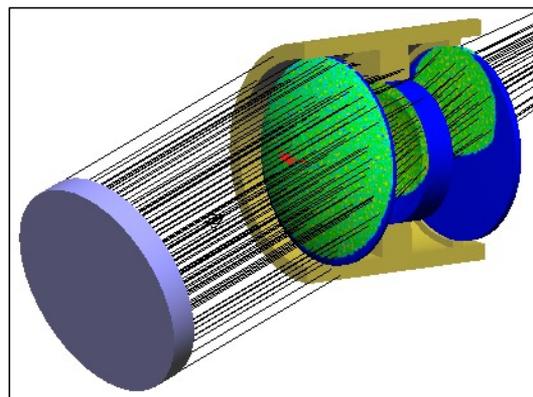


Figure: False color illuminance overlaid on lens geometry in the LightTools 3D View

LucidShape

Graphical output from LucidShape can be customized from context menus for the specific output. After you've opened the results, you can customize the appearance by right clicking on the chart.

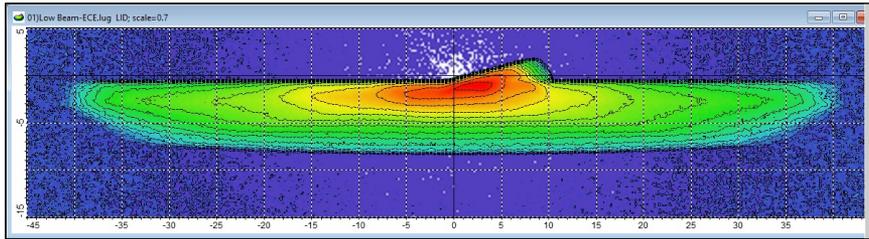


Figure: Analysis from LucidShape

To copy a chart or GeoView from LucidShape, right click in the window's area and select "Copy Bitmap". You can now paste the chart from the clipboard to the desired destination.

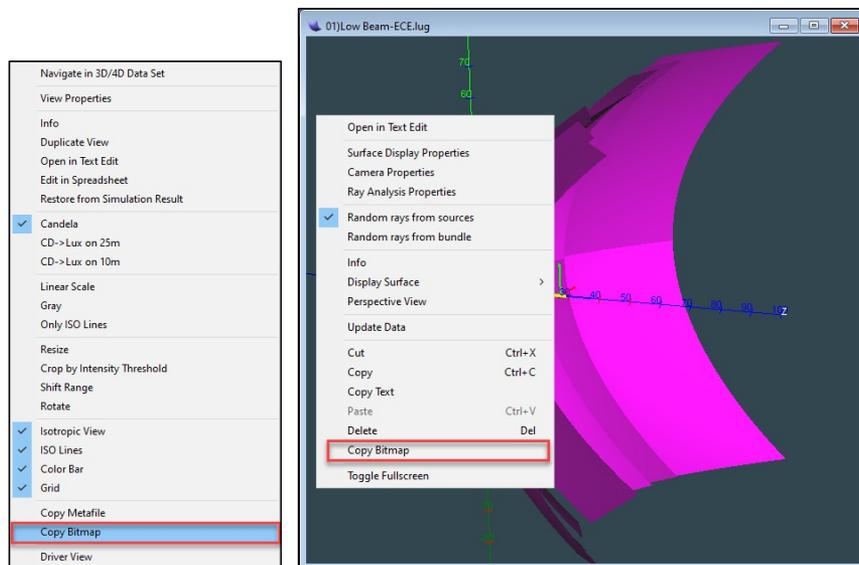


Figure: To copy output from a chart or the GeoView, right click and choose "Copy Bitmap"

You can use other options from the context sensitive menu as well. For example, when plotting sensor data you can switch ISO lines off for a smoother view, and select "View Properties" to open further chart customizations:

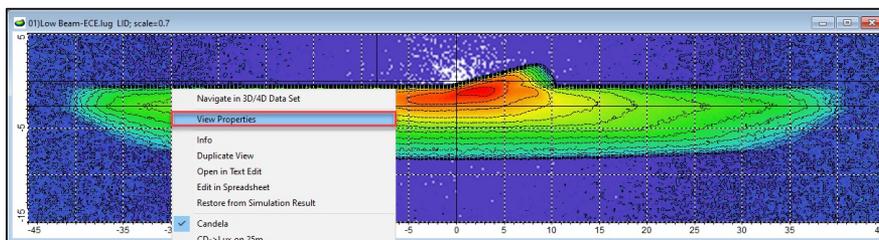


Figure: For chart customization, right click and choose "View Properties"

In the properties window, you can change settings such as the axes ranges, the type of chart, the scale, and more:

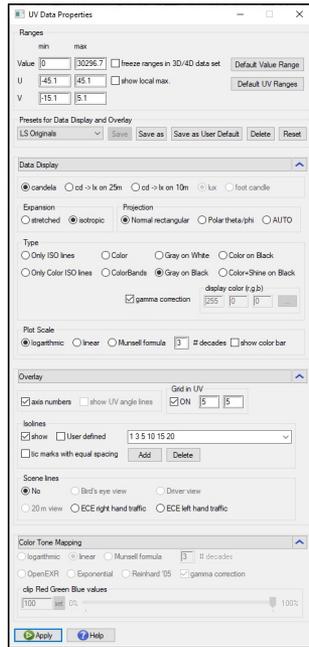


Figure: The data properties windows lets you customize the way sensor data is presented

You can customize the GeoView tool! The context menu has choices to set the background color and edit the global axis system attributes the Stock Scene selection.

- From the **GeoView's Options menu > GeoView**, you can set the background color and edit stock scene

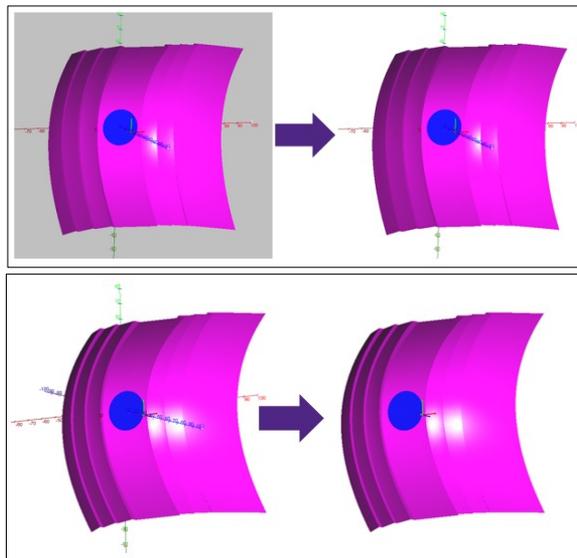


Figure: GeoView with the global axis system (on left) and without the stock scene visible

From the **GeoView's Options menu > Global Settings**, you can increase the line widths to make wireframes clearer to see in presentations and reports.

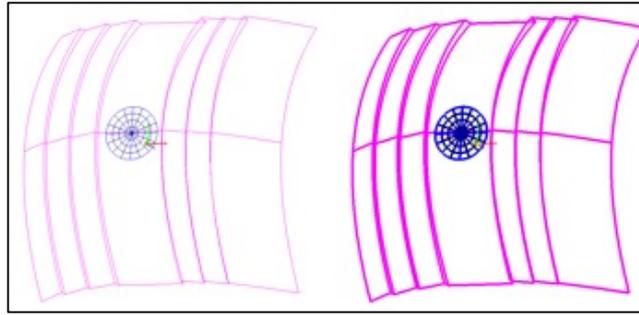


Figure: Wireframe view with default width (on left) and increased line width (on right)

The GeoView toolbar has options to change orientation and the change surface rendering mode. For instance, you can switch between shaded/wireframe modes, and even display sensor results from “Display Light Data”.

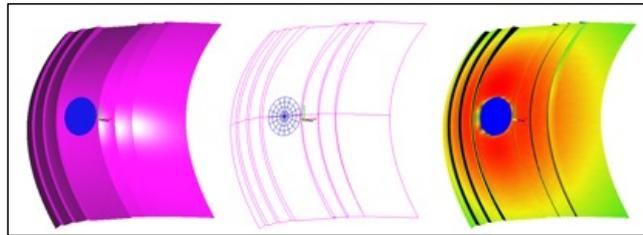
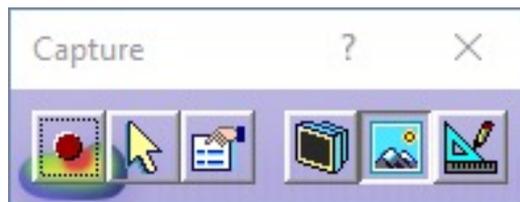
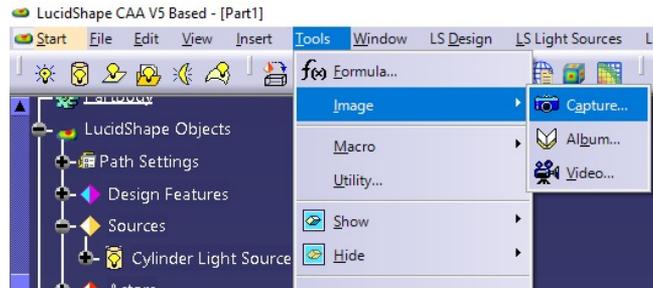


Figure: GeoView with shaded geometry (on left), wireframe geometry (middle), and Display Light Data (on right)

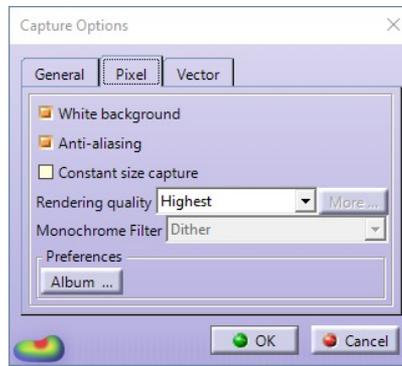
LucidShape CAA VA Based

To take a screenshot in CATIA you can go to Tools > Image > Capture:

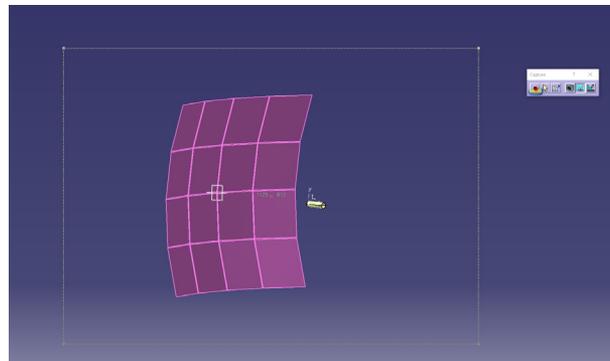
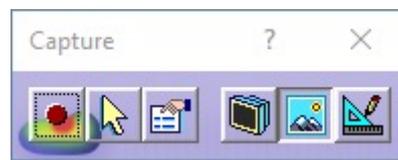


Click the 3rd Icon “Options”:

In the second tab "Pixel", you can check "White background", "Anti-aliasing" and switch render quality to "Highest":

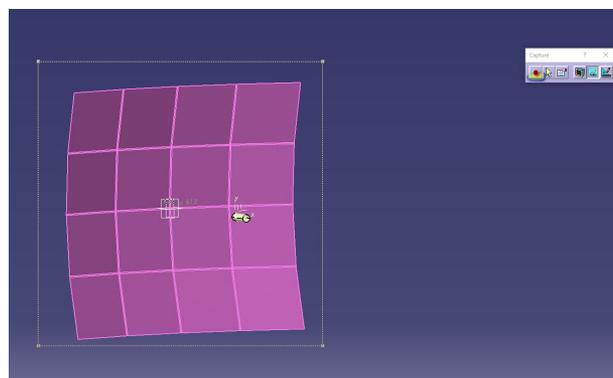


Click OK, and back with these icons, click the second one "Select Mode", and then do a left click, mode and release the left click in CATIA: a rectangle appears:

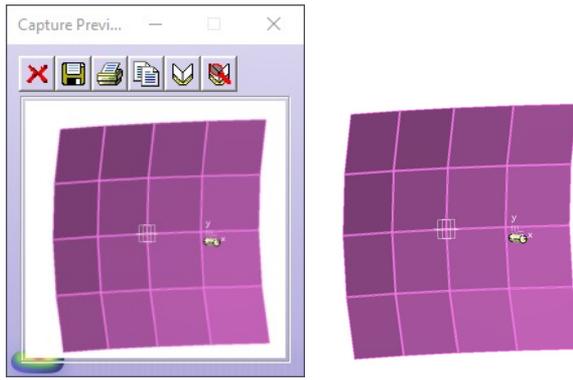


By clicking the corners of the rectangle and moving them, you can resize the area which will be taken as screenshot.

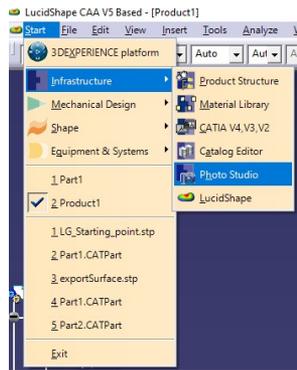
With the CATIA controls, you can move/rotate your design: the screenshot rectangle is not moving:



Once the screenshot size is adjusted, click the first icon "Capture": a new window is opening and you can either save the screenshot, or copy it:



Also, in case you want to take a screenshot from the same viewing position, you may want to create cameras: in a product, go to Infrastructure > Photo Studio:



V

On the right of the screen, click "Create camera" after you chose the view you needed:



In the CATIA tree, under Applications, the camera is created. You also see a glyph in the 3D view. By double clicking the camera, you will look at your design always from the same view. With a right click, properties, you can move the camera:



V

RSoft Photonic Device Tools

All RSoft Photonic Device Tools plot data through an included plotting program called WinPLOT. You can customize the plot through an editor with a comprehensive set of commands.

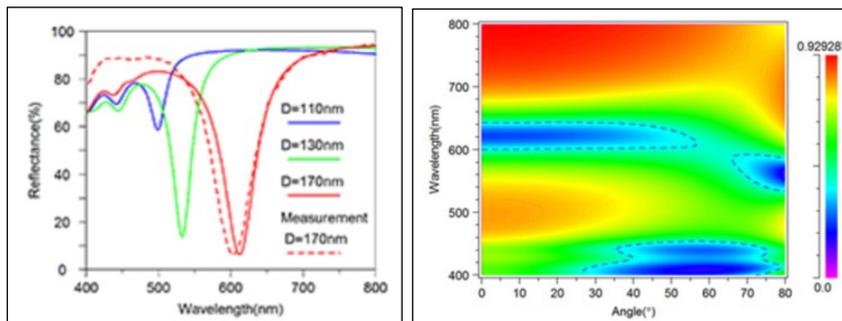


Figure: A customized line plot (on left), and contour plot (on right) from RSoft WinPLOT

Copying a plot from WinPLOT is easy, just go to the File menu > Export Graph to save to a variety of formats.

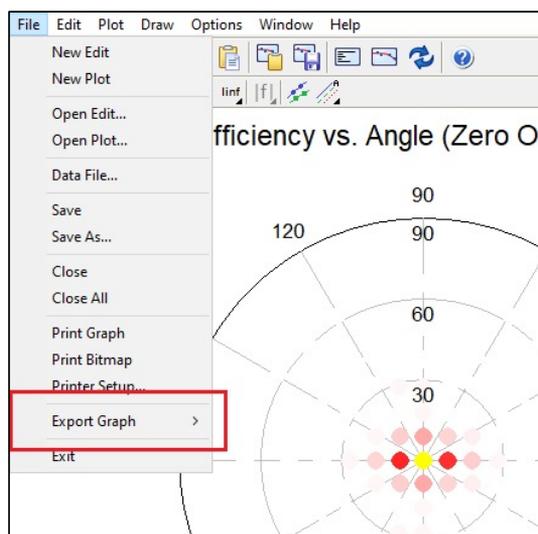


Figure: Export RSoft WinPLOT plots from the File menu > Export Graph

Each plot file contains a series of commands that control how the plot is displayed. Click the "View Editor" button in the toolbar to see and edit the commands. Then click the "View Plot" button to return to the plot. For example, the "/tt" command sets the "Title at the Top" of the plot. See the WinPLOT manual for command documentation.

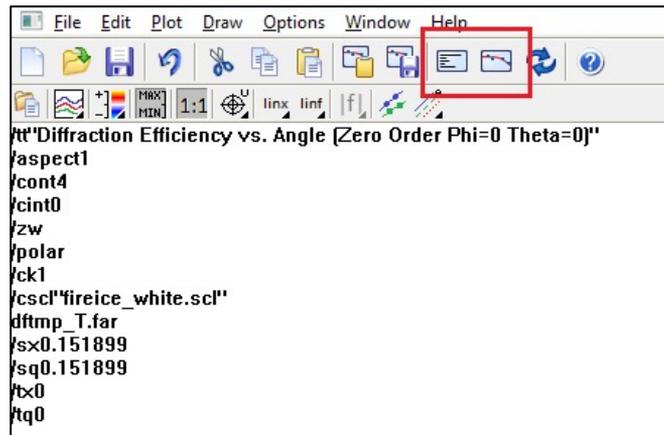


Figure: Edit WinPLOT settings from the View Editor

- Learn more about using WinPLOT to create high-quality graphics for publications:
 - [Line plots](#)
 - [Contour plots](#)

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