View Settings of 2D Data Arrays
Abstract

Data arrays are the most fundamental type of data in VirtualLab Fusion. As a generic data type, they are among the most flexible documents, offering a wealth of visualization and data manipulation options. As different kinds of data arrays are used in VirtualLab Fusion (e.g., 1D-, 2D-gridded and gridless data arrays), different visualization tools are available. In this document we will take an in-depth look at the visualization options of 2D Data Arrays and go through the corresponding View ribbon options in detail.
The View tab of the Main Menu ribbon allows for various customizations regarding the visual style of Data Arrays. The available tools are depending on whether the Data Array contains complex or real-valued data as well as the number of existing subsets. The following options are available throughout:

1. **Value Visualization**: Settings of view style, color table and scaling are offered.
2. **Selection**: This part comprises options to select or mark data inside an array.
3. **Zoom & Aspect Ratio**: Here, different option for zooming are available.
4. **Copy**: Allows the user to quickly copy the view settings from one Data Array to another.
If an active Data Array comprises multiple subsets (wavelength modes, field components,… ), a new section appears in the View ribbon that allows you to switch through the individual subsets (Subset Selection). A similar section appears if the data is complex valued (Data Quantity).
With this tool, users can visualize the results in 3D. In 3D-mode:

• press the left mouse button to rotate the view.
• press the left mouse button while holding the X/Y/Z-key to rotate around a specific axis.
• press the Shift-key and the left mouse button to shift the view laterally.
Data Arrays can be displayed with and without smoothing by clicking the Pixelated View button. Please note that this button only applies a specified interpolation algorithm onto the document. The applied interpolation technique can be modified in the Manipulation ribbon.
Color Scheme

Tricolor

Rainbow

Astro Colors
In the next section the user can choose between different color schemes for depicting 2D data. In addition, it is possible to customize the existing schemes or even define your own.
In case multiple orders of magnitude are of interest, logarithmic or exponential functions can be utilized in the color scheme of any color table. For a better visualization of contours, it is also possible to disable the interpolation between the defined colors.
By default, the shown data range will be determined automatically by the min. and max. value. With the User-Defined Scaling setting, the user can modify the displayed data range in the Property Browser.
If parts of the data are selected by a Rectangle or Ellipse Marker, the Selection Based Scaling option can be used to change the scaling according to the minimum and maximum value within the selection.
Additional GUI features, such as display of the legend and 1D profile along a line marker can be switched on or off.
By default, if the Data Array contains multiple subsets, the scaling will be determined for each subset individually. The Equalize Scaling option automatically adjust the scaling of all subsets according to the current one.
Markers – Selection of Data

VirtualLab Fusion offers three different selection tools, such as selecting a specific point, line or region within the Data Array. Some tools in the View and Manipulations ribbon require an active marker to be available.

Detailed information about the markers and coordinates can be found and adjusted in the Property Browser!
The selection of a region can be switched from rectangular to elliptic in the Property Browser.
In addition, for *Rectangle or Ellipse Marker* there is a selection of tools available to quickly detect a specific region or move an already existing marker.

The available tools are:
- select the entire window
- select region that corresponds to a pre-defined portion of the amplitude sum or squared amplitude sum
- move marker to origin
- copy marker from another window
With Data Restricted Zoom deactivated, the Data Array can be zoomed out indefinitely.
Zoom into Selection

![Image of Zoom In and Zoom Out](image-url)
Lateral Scaling

By default, *Data Arrays* are visualized with the same scaling on both axis, meaning that i.e., 1mm on the x-axis has the same length as 1mm on the y-axis. This can be changed by selecting *Free Aspect Ratio* in the *View* tab.
Copy View Settings

reference

before copying

after copying
### Document Information

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