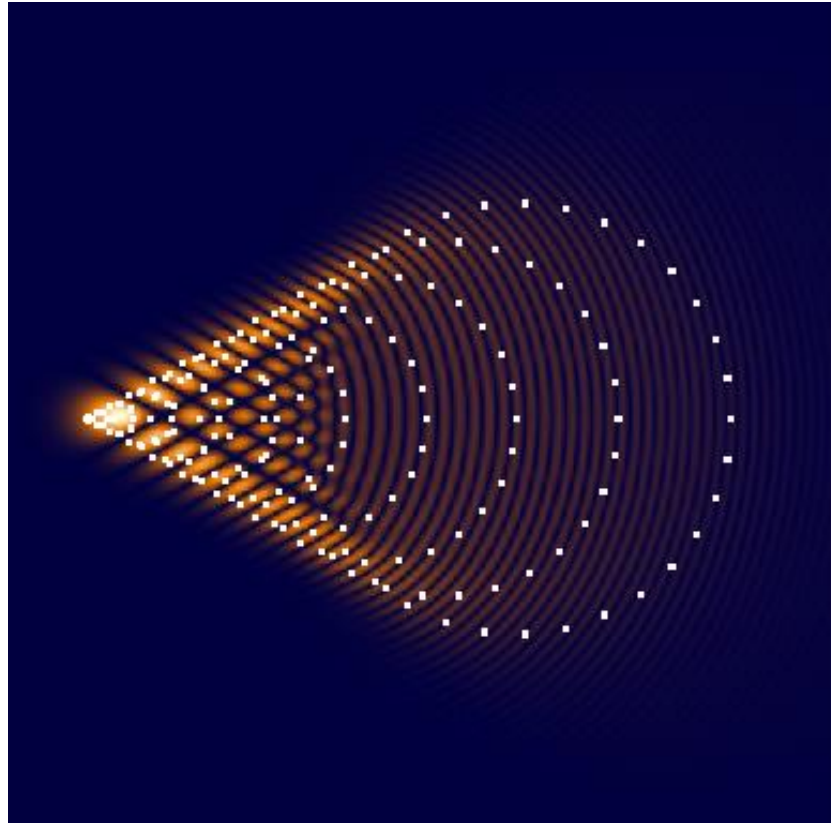


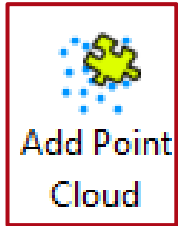
## **Add Point Cloud to Data Arrays**

# Abstract



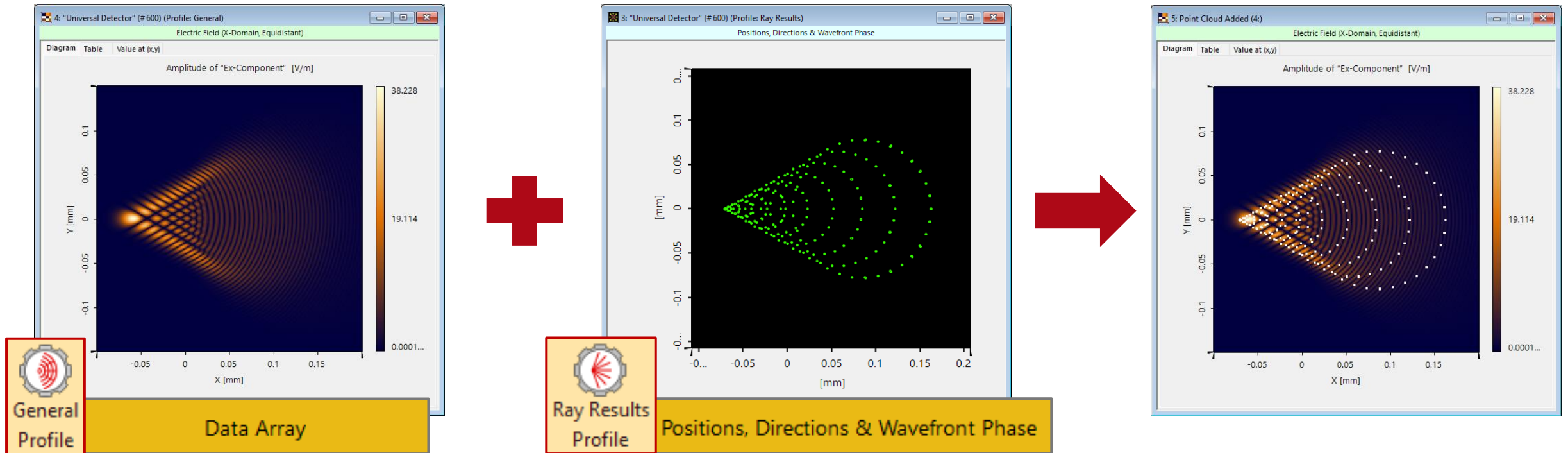
While the fast and accurate provision of simulation results is the main purpose of any optical simulation software, the ability to manipulate the visualization of the results and adjust it according to personal preference or in order to best showcase a specific set of results should not be underestimated. With this in mind, the fast physical optics software VirtualLab Fusion makes a point of providing maximum flexibility in the manipulation and configuration of displays of results. In this use case we want to put the spotlight on a specific graphics add-on, which allows the user to overlay a point cloud (such as a dot diagram generated by a *Ray Results Profile* simulation) on another result document.

# Add Point Cloud



The *Add Point Cloud* tool creates a result document in which a point cloud is overlaid over another result document. This is particularly useful to superimpose a dot diagram on top of the corresponding field result.

The tool is available for all *2D Data Arrays* and requires a set of gridless data (*Positions, Directions & Wavefront Phase* document or *Data Array* document with gridless data) generated for instance by a *Ray Results Profile* simulation or by a *Universal Detector* when the interpolation is deactivated.

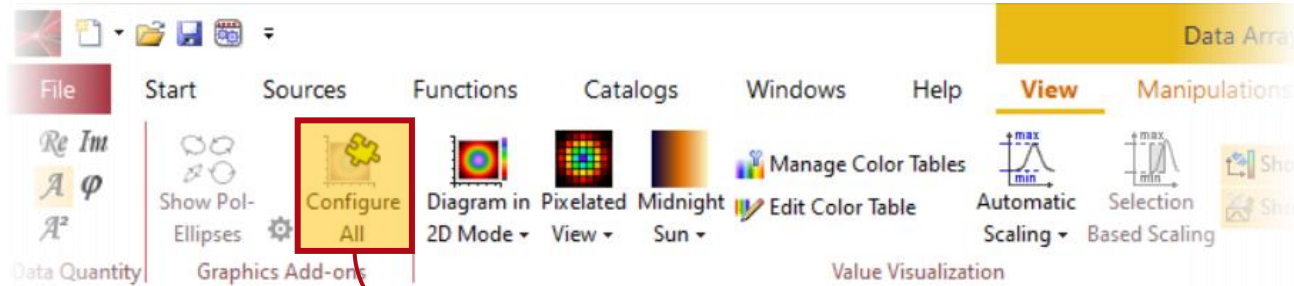


# How to Add a Point Cloud to Another Data Array

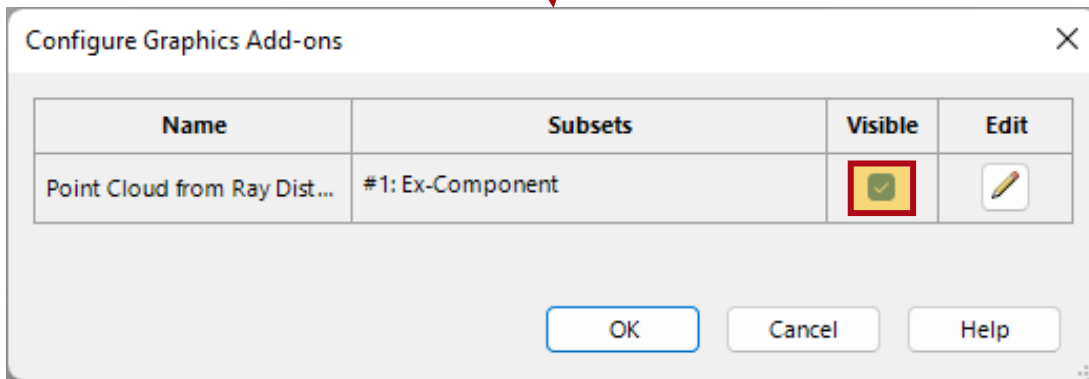
The screenshot illustrates the software interface for adding a point cloud to a data array. The 'Manipulations' tab is active, and the 'Add Point Cloud' button is highlighted with a red box and a red arrow. A dialog box titled 'Select Point Cloud Data (Ray Distribution or Other...)' is open, showing a list of data arrays, with '29: Universal Detector (# 600) (Profile: Ray Results)' selected. The main window displays two plots: 'Electric Field (X-Domain, Equidistant)' and 'Positions, Directions & Wavefront Phase'. The 'Electric Field' plot shows a 2D plot of the amplitude of the 'Ex-Component' [V/m] versus X [mm] and Y [mm]. The 'Positions, Directions & Wavefront Phase' plot shows a 2D plot of positions and directions versus X [mm] and Y [mm]. A 'Property Browser' is visible on the right side of the interface.

To add a point cloud to another *Data Array*, first select the *Data Array* in question. Then, under the *Manipulations* tab, the tool *Add Point Cloud* should be visible. After clicking there, a list of all open point cloud results available to act as the overlay will pop up, for the user to choose the desired one.

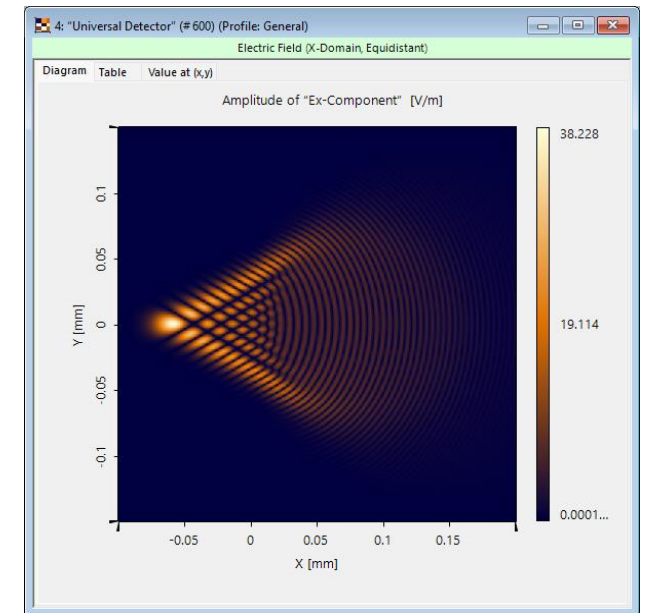
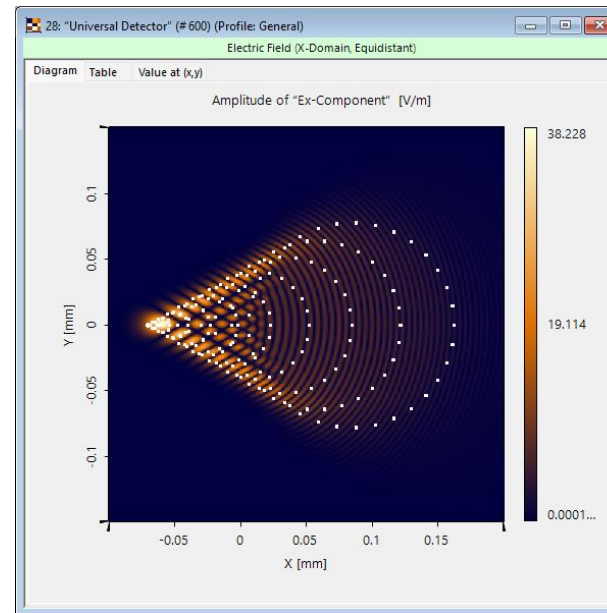
# Visualization Options – Point Clouds



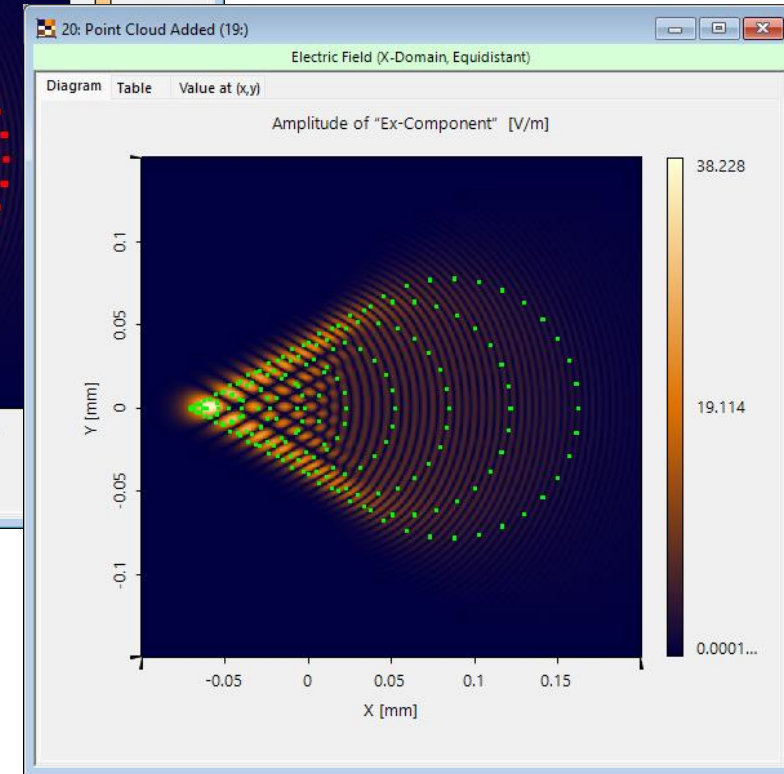
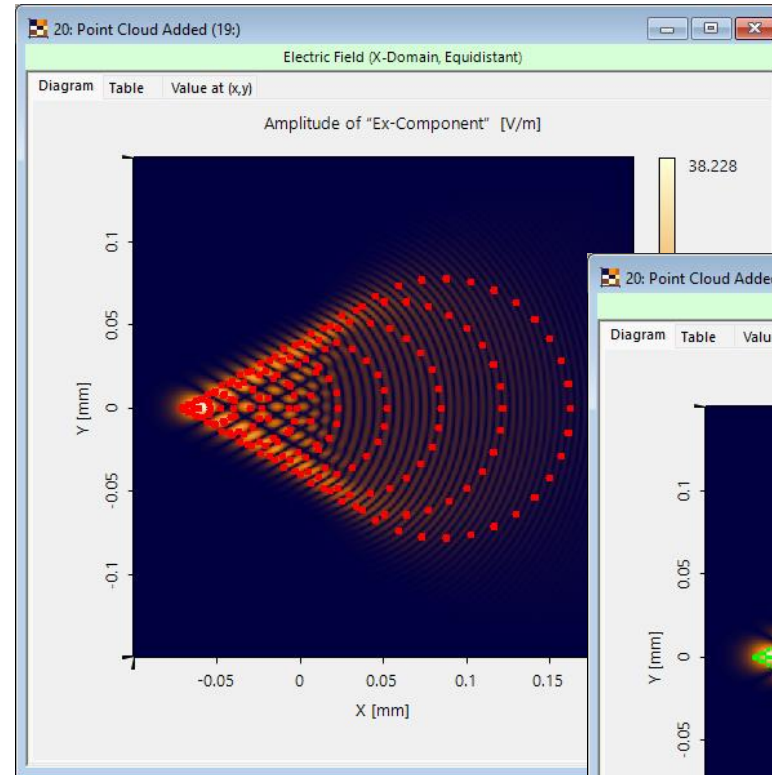
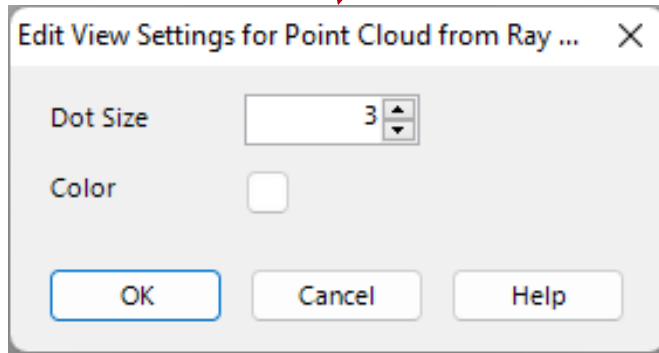
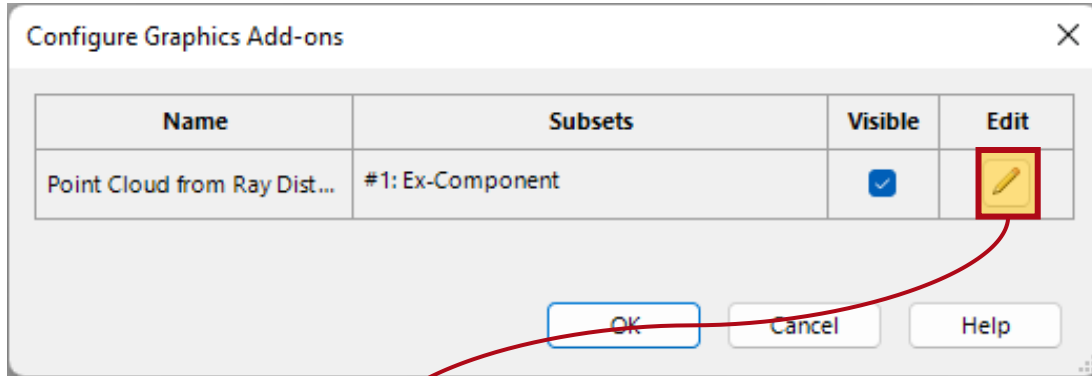
*Note: While in this example we use a point cloud from a Ray Results Profile simulation, the same principles apply to any kind of point cloud (e.g. one that is imported).*



Through the option *Configure All* in the *View* ribbon, the visualization parameters for the point cloud can be specified, including the option to not show it at all.



# Visualization Options – Point Clouds



It is also possible to specify the color and size of the individual dots – allowing the overlay to be customized to the user's liking.



# Document Information

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title	Add Point Cloud Overlay to Data Arrays
document code	SWF.0028
document version	1.0
software edition	VirtualLab Fusion Basic
software version	2022.1 (Build 1.554)
category	Feature Use Case
further reading	<ul style="list-style-type: none"><li>• <a href="#">Graphics Add-ons</a></li><li>• <a href="#">Look &amp; Feel -Video: Add Point Cloud to Data Array</a></li></ul>