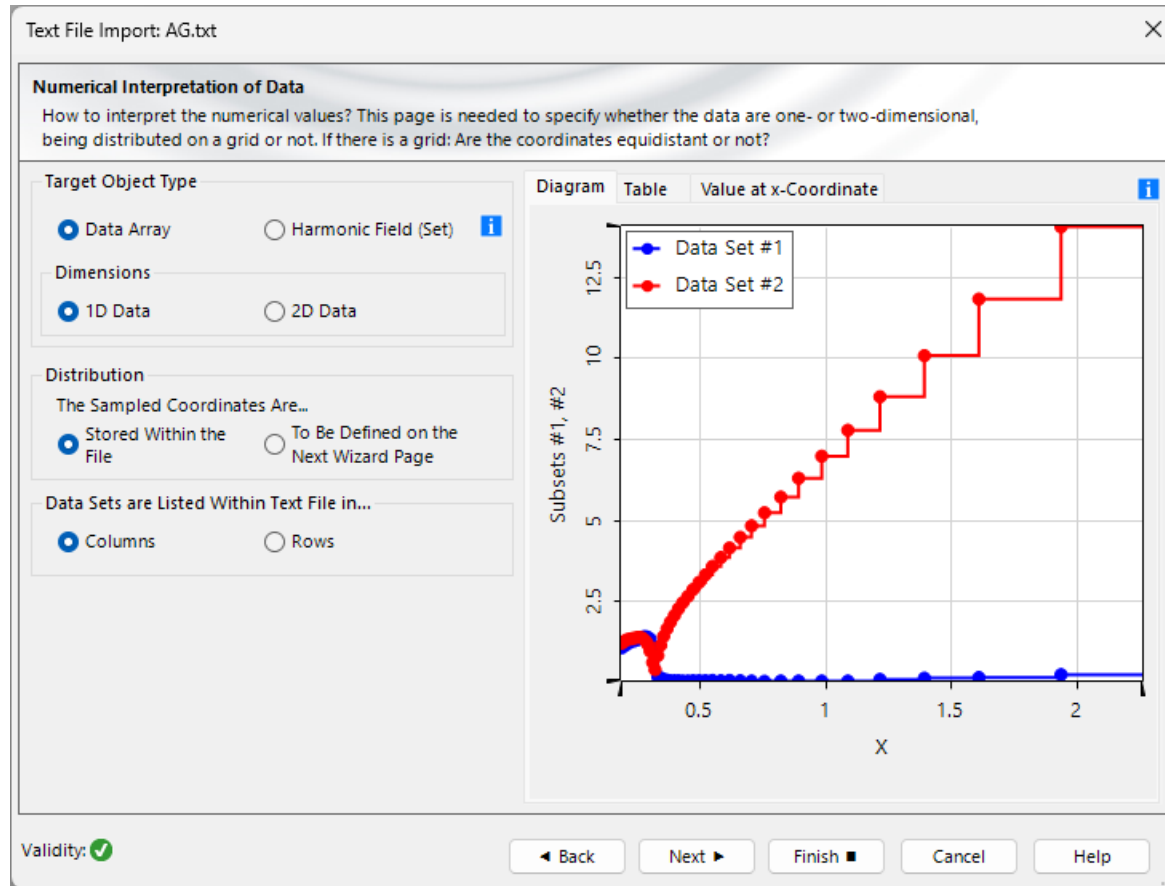


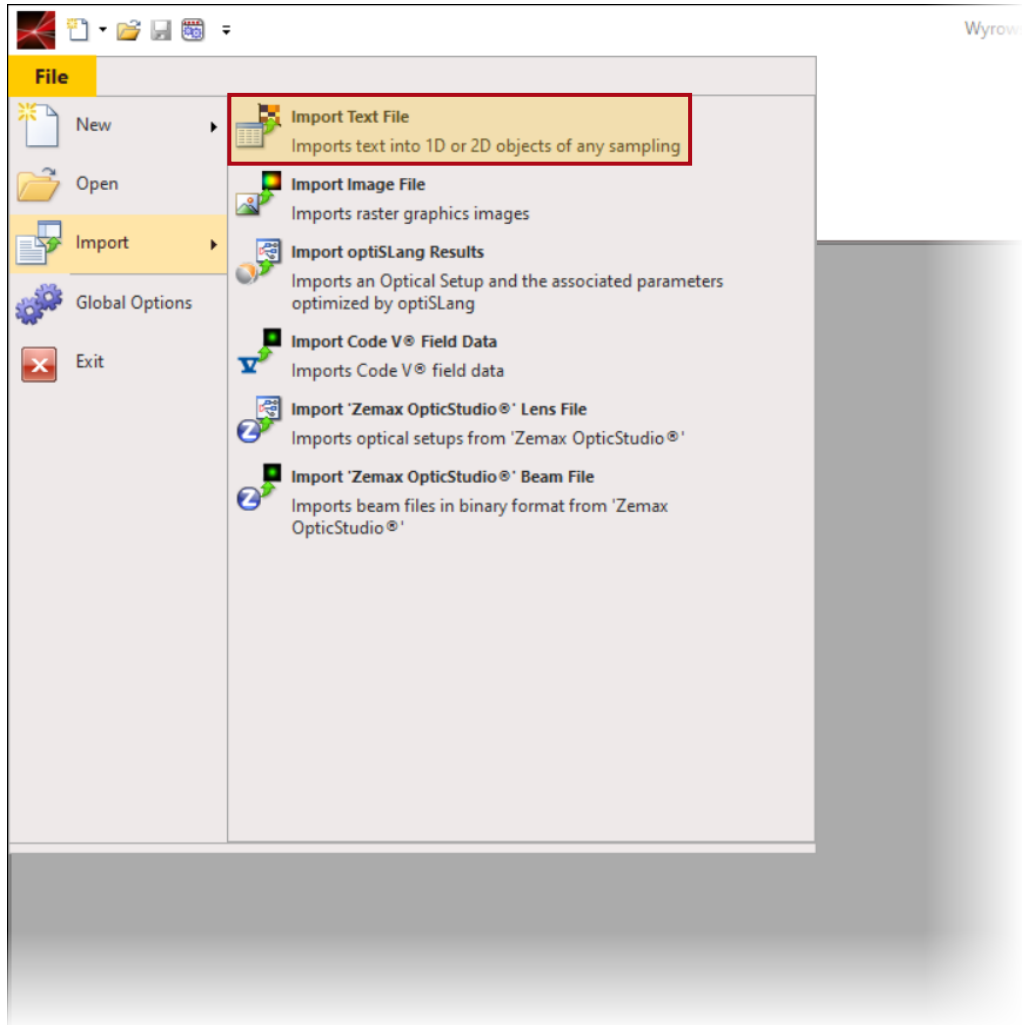
Import Text Files into VirtualLab Fusion

Abstract



VirtualLab Fusion provides an intuitive workflow for data importation, supporting various data formats. Users can import 2D data arrays, (such as field data) or both equidistant and non-equidistant 1D arrays, e.g., dispersion curves for specific materials. This Use Case introduces a tool that enables users to import data from any type of text file.

Import of Text Files



You can access the import tool by navigating to File > Import > Import Text File. It supports various custom text data formats like txt or csv files.

Import Text Files

Text File Import: Focus.txt

Parsing of Text
Some basic information for converting the text into numerical values are needed first.

Relevant Content

Read Rows
from: First Row
to: Last Row

Ignore First: 0 Characters in Row

☐ Contains Complex Values

Handling of Rows and Columns

Skip Lines Starting with: #

Column Separator: Any Whitespace

Handling of Numbers

Decimal Separator: Point

Digit Group Delimiter: (None)

1	# Number of Data Points:	"(512; 512)"
2	# Data Meaning:	Spectral Irradiance for Wavelength of 532 nm
3	# Wavelength:	532 nm
4	# Data Property:	Power per Volume [W/m ³]
5	# x-Coordinates:	Property: Length [m] Coordinate o
6	# y-Coordinates:	Property: Length [m] Coordinate o
7	0.20421441932111853	0.20659625255683392 0.208782659952945
8	0.20653160543890736	0.20866406273446508 0.210581978645965
9	0.20865503942059105	0.21051939536715419 0.212153369226986
10	0.21055389601607821	0.21213497692292668 0.213473425679258
11	0.21219528397483584	0.21348170656077958 0.214517110332867
12	0.21354480966003742	0.21452919111111457 0.215258257180169
13	0.2145592247417541	0.21523809769941296 0.215661655856938
14	0.21509768512305188	0.21546804483590057 0.21558797132
15	0.21515984497112217	0.2152229274058341 0.215045530231866
16	0.21480105264227867	0.21456385060337874 0.214101149780965
17	0.21407879761230081	0.21355387436316633 0.212823347981472
18	0.21305122801328052	0.21225645816609628 0.211280717866013
19	0.21177581062261625	0.21073405448709759 0.209540456905888
20	0.21030813330414436	0.20904685088483982 0.207667051618595

Validity: 1

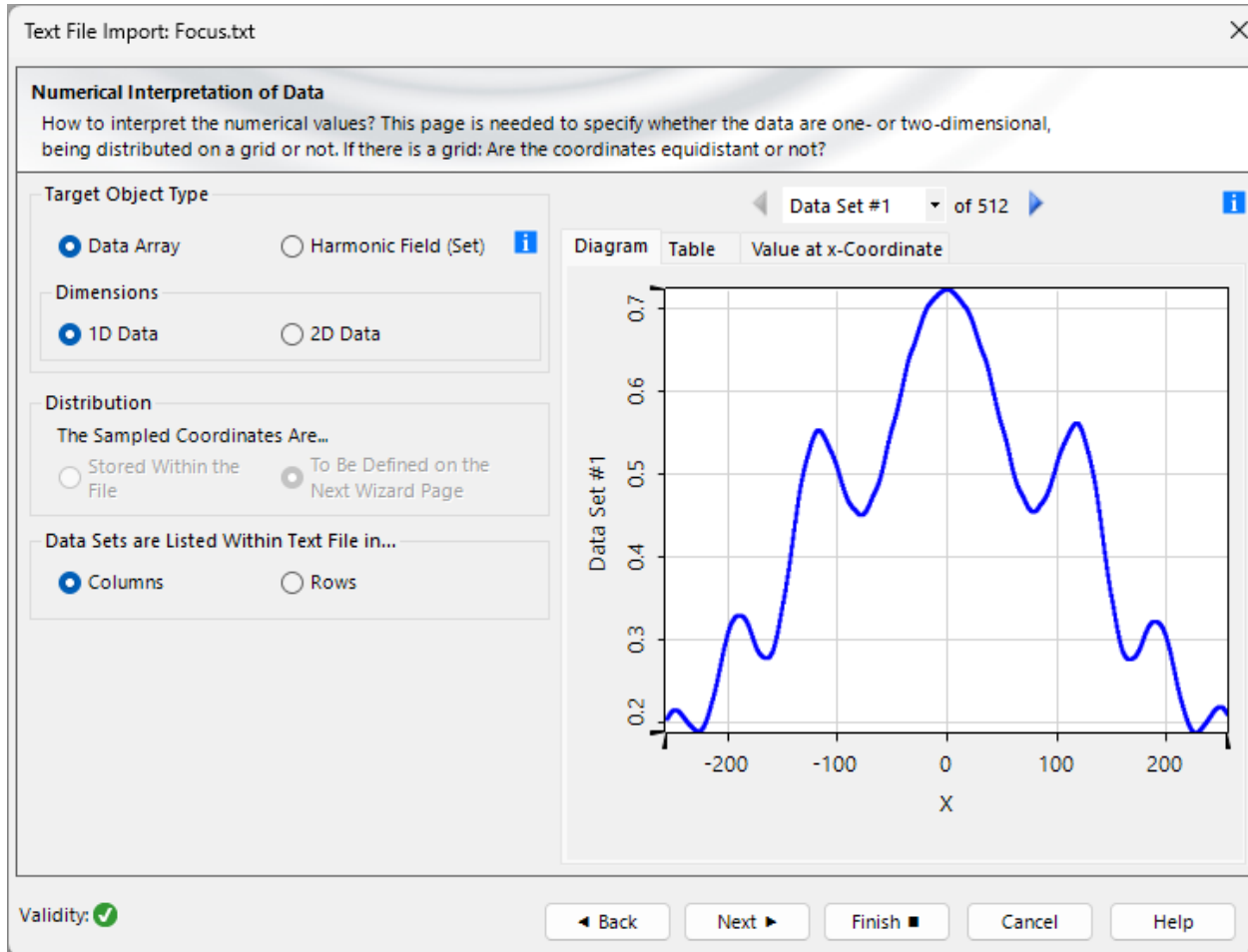
Back Next Finish Cancel Help

The "Suggest Characters" button automatically adjusts fitting parameters, although users can also specify them individually if desired.

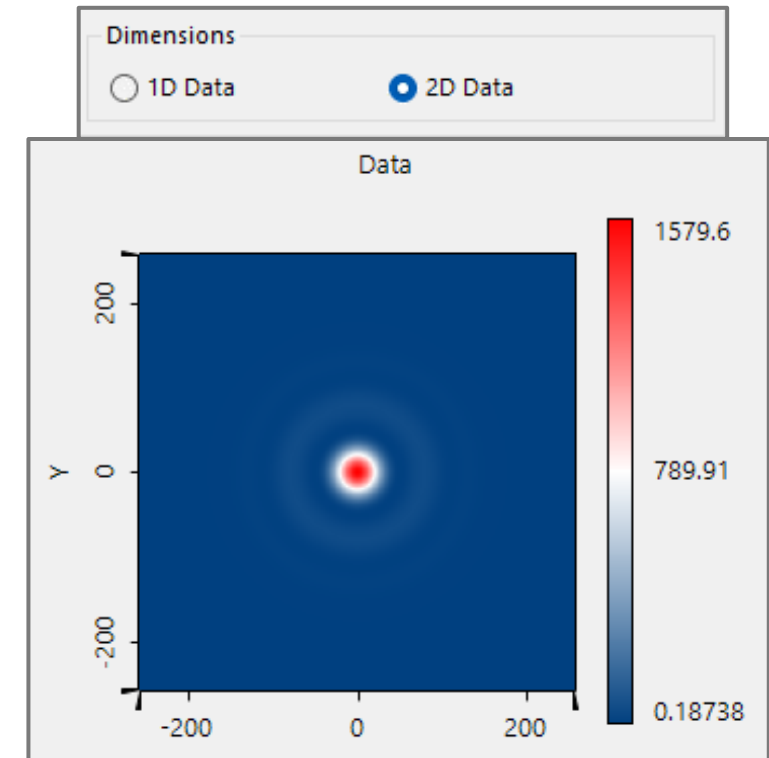
A preview will be displayed on the right side, highlighting any unreadable entries in red.

0.19204846821180518	0.19159047876251911	0.1914776449501
0.19152065400823526	0.191400560045907	0.191666736847
0.19123243412129931	0.191486275%\$483892114	0.192163789707
0.19112479425332107	0.19178886195207068	0.192909304629
0.1912701780565797	0.1923763424275664	0.1939662828131

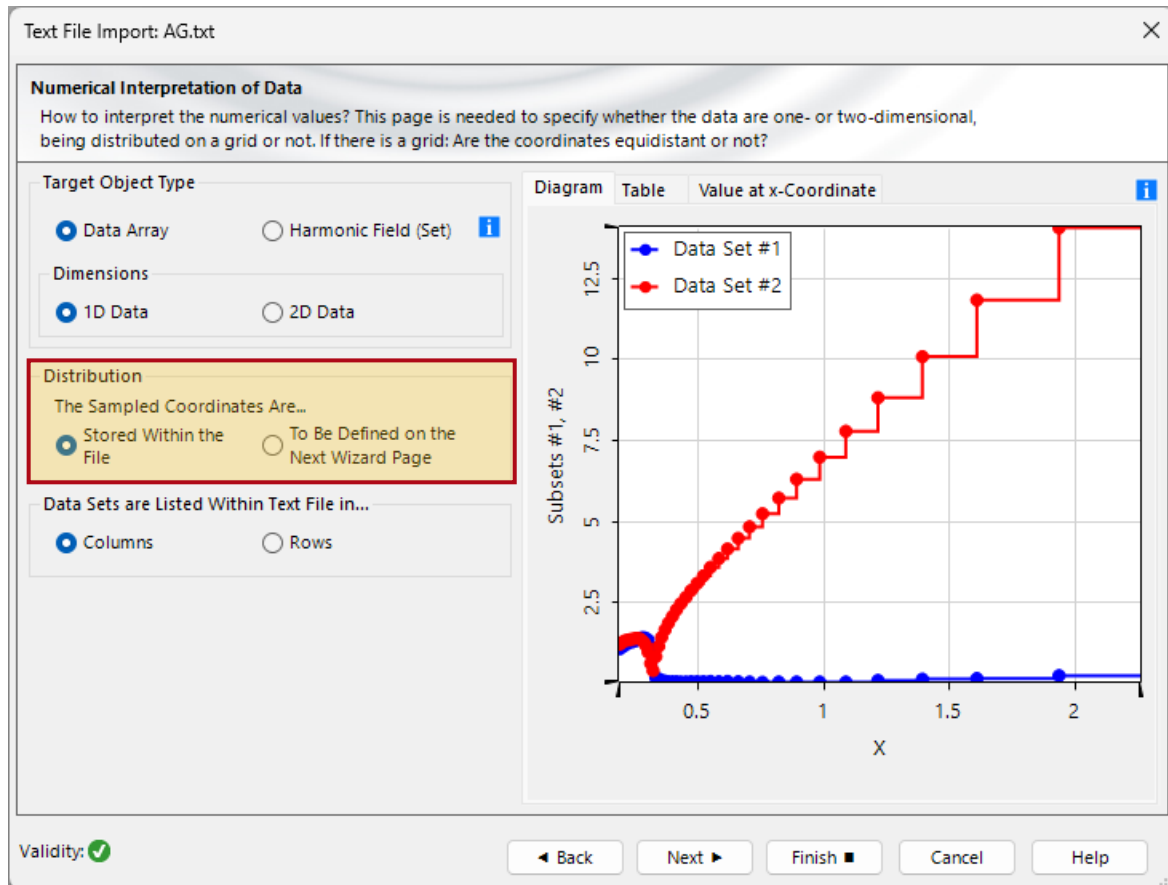
Type of Data Array



1D and 2D data arrays can be imported. For 1D data with multiple subsets, the user can specify if the individual sets are represented by the columns or rows of the text file.



Type of Data Array– Non-equidistant Data Arrays



For non-equidistant data arrays, users can specify whether the coordinates are already provided in the file or need to be defined in the wizard. If the former option is chosen, the software extracts coordinates from the first column (or row). If the latter option is selected, the same workflow as for equidistant data follows.

coordinates	0,1879	1,07	1,212	data
	0,1916	1,1	1,232	
	0,1953	1,12	1,255	
	0,1993	1,14	1,277	
	0,2033	1,15	1,296	
	0,2073	1,18	1,312	
	0,2119	1,2	1,325	
	0,2164	1,22	1,336	
	0,2214	1,25	1,342	
	0,2262	1,26	1,344	
	0,2313	1,28	1,357	
	0,2371	1,28	1,367	
	0,2426	1,3	1,378	
	0,249	1,31	1,389	
	0,2551	1,33	1,393	

Definition of Coordinates

Text File Import: Focus.txt

Coordinate Properties and Interpolation & Extrapolation
The properties of the independent variables (coordinates) are to be set here. Additionally, interpolation and extrapolation settings can be defined.

x-Axis

Description: X

Physical Property: No Unit

Interpolation Method: Nearest Neighbor

Dimensions

Sampling Distance: 1

Positioning

Center Around Zero

y-Axis

Description: Y

Physical Property: No Unit

Interpolation Method: Nearest Neighbor

Dimensions

Sampling Distance: 1

Positioning

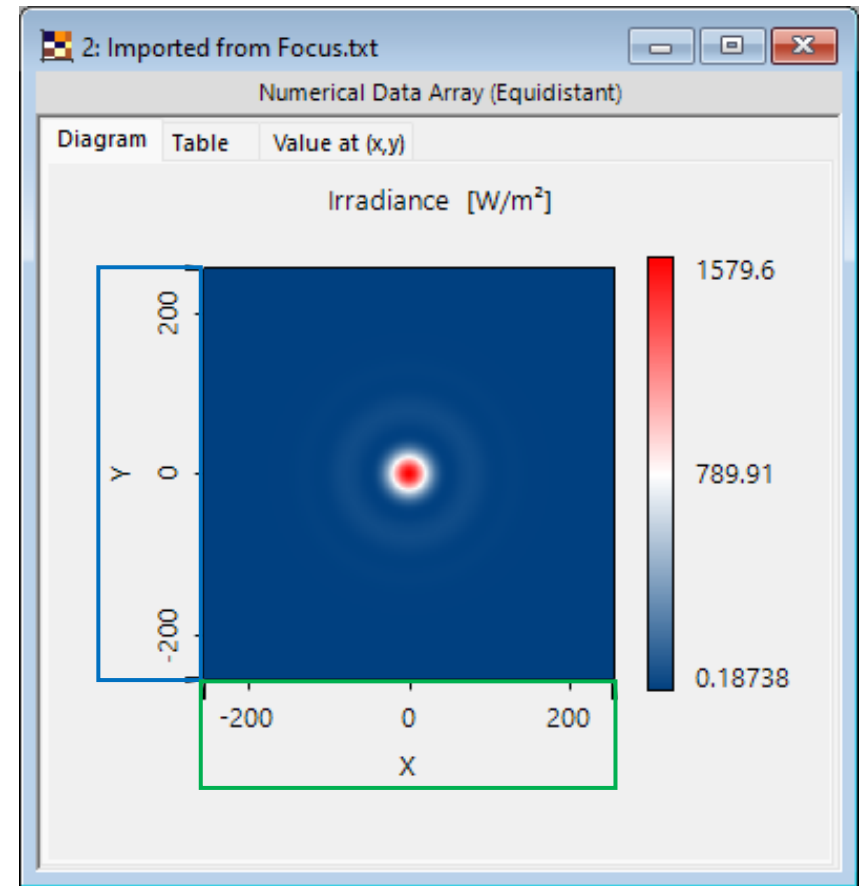
Center Around Zero

Extrapolation: Outside Values are Equal to the Nearest Border Data Point

Copy From...

Validity:

Back Next Finish Cancel Help



Physical Properties - Unit

Text File Import: Focus.txt

Subset Properties
The properties of the dependent variables are to be set here.

Copy From...

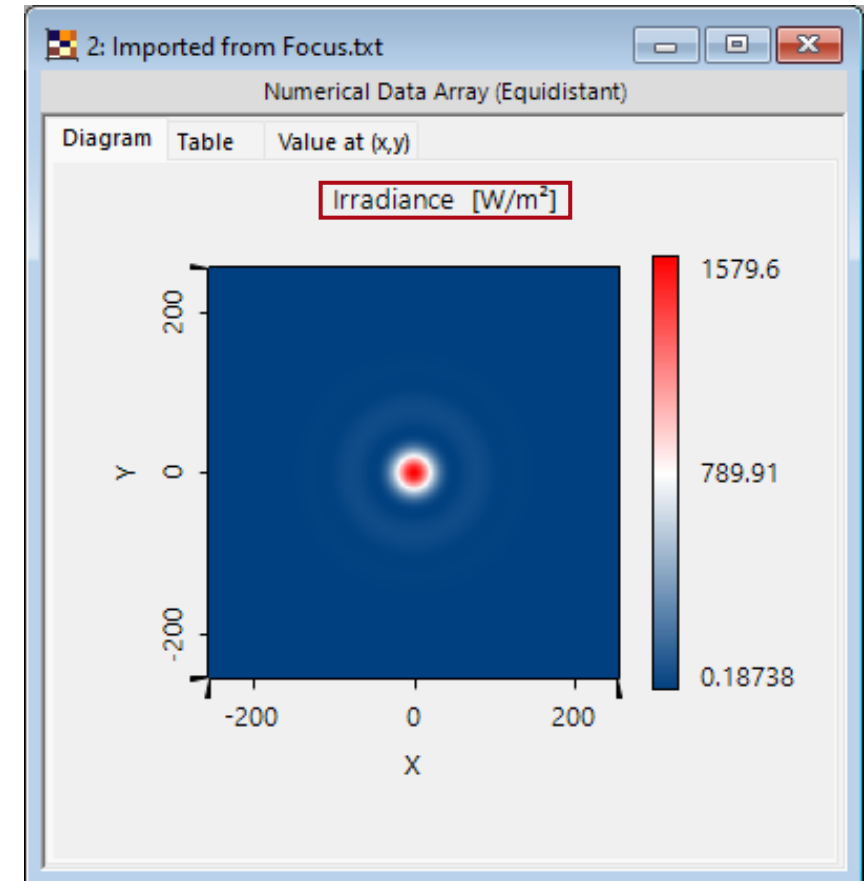
Subset #	Description	Physical Property	Factor
1	Irradiance	Power per Area	1

Validity:

VirtualLab Fusion offers a wide array of different units for imported data arrays!

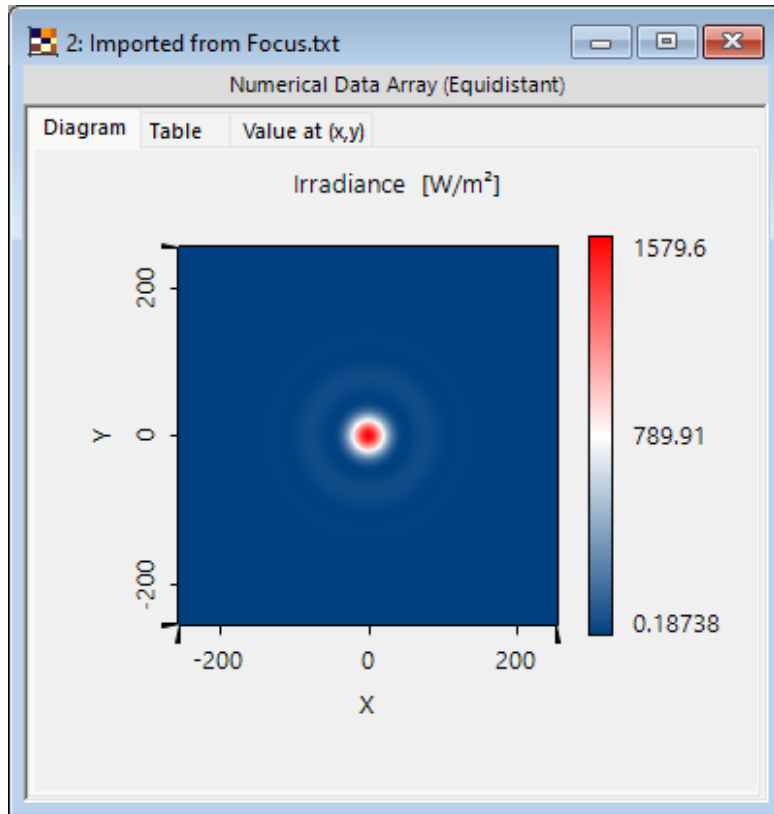
- Miscellaneous
- Base Quantities and Reciprocals
- Angles
- Radiometry
- Photometry
- Environment
- Densities
- Dimensionless
- Energy / Power
- Fields

- Absorption Coefficient
- Area per Energy
- (Area per Energy)²
- Energy (eV)
- Energy (J)
- Energy per Area
- Energy per Volume
- Power
- Power per Area
- (Power per Area)²
- Power per Solid Angle
- Power per Solid Angle and per Area
- Power per Volume
- Volume per Energy
- (Volume per Energy)²



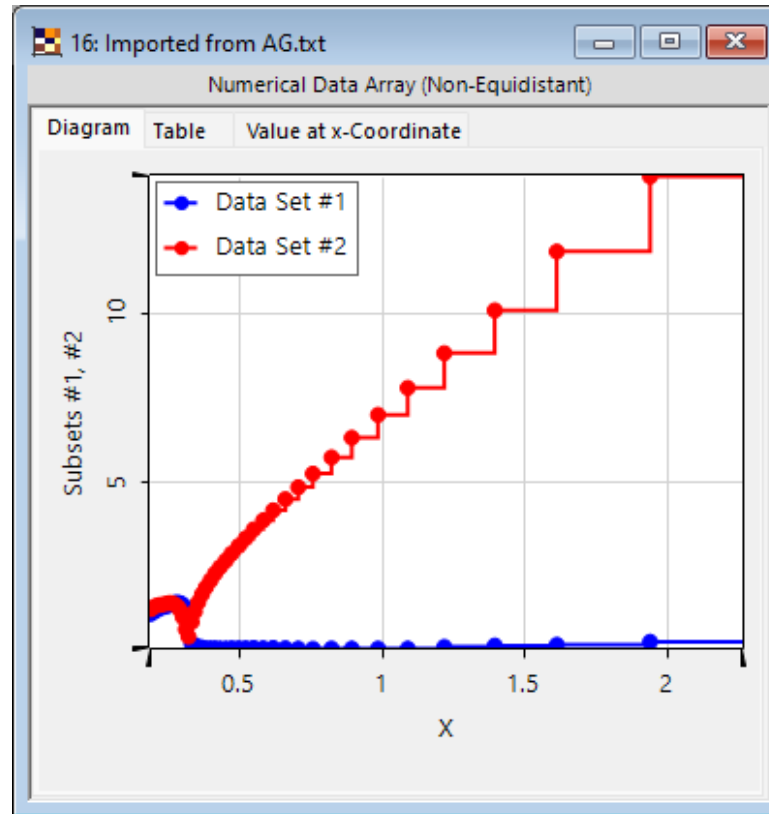
Examples

focus of an aspheric lens



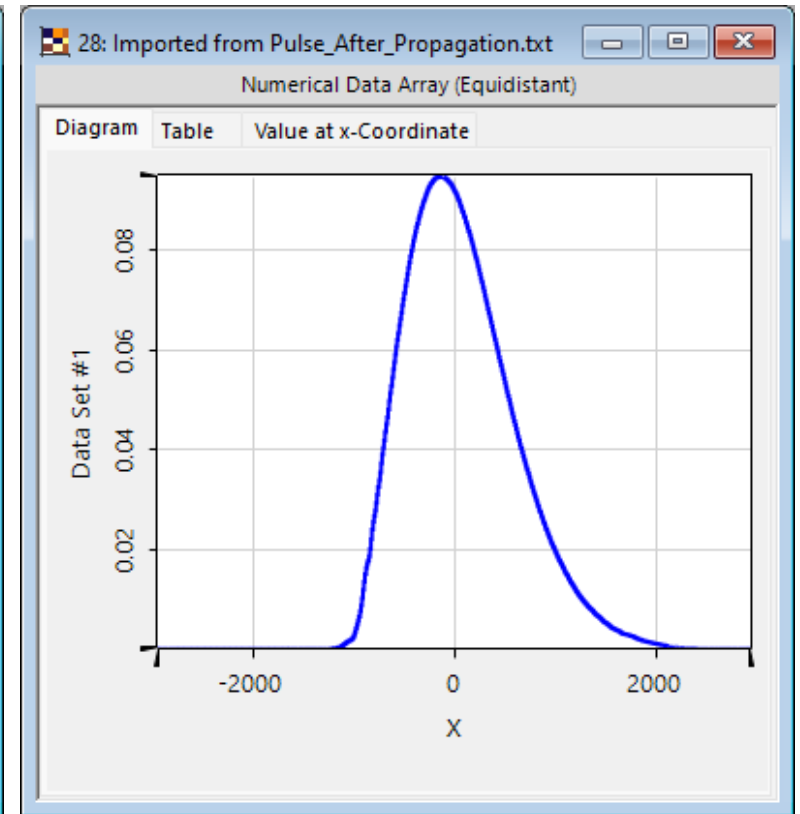
2D, equidistant grid

material data of silver



1D, non-equidistant, multiple subsets

propagated pulse through sea-water



1D, equidistant

Document Information

title	Import Text Files into VirtualLab Fusion
document code	SWF.0052
document version	1.0
required packages	-
software version	2024.1 (Build 1.132)
category	Feature Use Case
further reading	<ul style="list-style-type: none">- Import of Images- Import Lens into VirtualLab Fusion- Import Material Data into VirtualLab Fusion- Programmable Dispersion Formula