

UseCase.0001 (1.1)

Setting Global Options in VirtualLab

Keywords: global options, settings

Description

- This use case describes the basics about the global options dialog of VirtualLab.
- Global options are used for different aspects of VirtualLab, for example view or performance settings.
- The general structure of the edit dialog of the global options is explained.
- The global options dialog can be opened by clicking on the Global Options item in the File menu:



Global Options – Field and Sampling

Global Options			x
Fields and Sampling Deperations View Paran	Performance	Other Settings	
	icicia i citolinarico	outor octangs	
Default Wavelength			
vvavelength		532 n	m
Sampling: Default Dialog Entries			511
Sampling Points	128	x 12	8
Sampling Distance	10 µm	х 10 µr	n
🔽 Array Size	1.28 mm	x 1.28 mr	n
Automatic Sampling: Default Parameters			51
Oversampling Factor			3
Size of Embedding Frame (Sampling Poin	ts)	1	0
Default Field Parameters			
Field Size Factor			1
Relative Edge Width		10	%
Reset All 📔 🕞	Ok C	ancel Help	

- The user can enter several defaults for the generation of fields on the Fields and Sampling tab.
- For example:
 - default Wavelength
 - global Oversampling Factor
 - global Field Size Factor
- These defaults are used during the simulation of the optical setup.

Global Options – Operations

Global Options	×
Fields and Sampling Operations View Parameters Performance	Other Settings
Array Operations Settings	
Automatic Resampling in Array - Array Operations	
✓ Use Embedding for Field * Transmission Operations	
Duplication State for Operations on 1D Data Arrays	
Operate on Calling Object Opulicate	Ask Every Time
Duplication State for Operations on 2D Data Arrays	
 Operate on Calling Object Duplicate 	Ask Every Time
Propagation in Light Path	
Default Free Space Propagation Method for Linkages	Dperator 🔹
Enable Logging of Automatic Propagation Operator in Message	e Window
Settings for Automation Techniques	
Deviation Threshold	0.01
Power Portion for Field Size Estimation	99.9999 %
Light Field Interpolation Settings	
Field Size Truncation Factor for Accelarated Sinc Interpolation	1.5
Orientation of Light Path Elements	
Default Definition Type Spherical Angles	•
Reset All 🖉 🛃 Ok Car	ncel Help

- The tab **Operations** can be used to specify the default behavior for different actions within VirtualLab.
- The user can select the default free space operator that shall be used within the system, or the defaults for the automatic propagation operator and many more.

Global Options
Fields and Sampling Operations View Parameters Performance Other Settings
General View Settings Data Array View Harmonic Field View
General Form Settings
Visual Style Office 2013
Style Color Teal Style Lightness Bright
Initial Window Size of Result Documents 600 丈 × 620 🛫
Global Font
O Use Recommended Font Configure Font Individually
Microsoft Sans Serif (8.25 pt; regular)
Display of Numbers
Number of Digits 5
Default Length Unit Meters
Two-Dimensional Views
Show Legend
Color System LightTrans Color System
Stack Preview Image: Stack Preview Image: Stack Preview
Reset All 🔊 🖌 Ok Cancel Help

- The user can also specify view parameters.
- The defaults for view parameters are separated into 3 groups:
 - General View Parameters
 - Data Array View Parameters
 - Harmonic Field View Parameters

Global Options
Fields and Sampling Operations View Parameters Performance Other Settings
General View Settings Data Array View Harmonic Field View
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Microsoft Sans Serif (8.25 pt; regular)
Display of Numbers
Number of Digits 5
Default Length Unit Meters
Two-Dimensional Views
Show Legend
Color System Light Trans Color System
Stack Preview
☑ Use Component Coordinate System for Stack Preview
Reset All

- The visualization of the VirtualLab user interface can be completely customized.
- This is done by the settings in the General View Settings tab.
- The user can enter the
 - Visual Style
 - Default Initial Window Size
 - Font to be used
 - Number of Digits

Displayed Number of Digits

- The set value for "Number of Digits" defines how many digits are shown for numbers by default.
- Most single number displays can be changed via context menu (right mouse click) so that 10 digits are shown instead of this default number in any case.

Position Values X	0 m			
Z	1.2346E+09 m	Precision	•	Full (10 digits)
	5	Undo		Default (5 digits)
	Di	Сору		
	(i)	Paste		
	*	Cut		
		Select All		

Position Values		
X	0 m	
Y	0 m	
Z	1234567000 m	

Global Options
Fields and Sampling Operations View Parameters Performance Other Settings
General View Settings Data Array View Harmonic Field View
Default Color Lookup Tables
Real Part / Real Data Imaginary Part Amplitude Phase Squared Amplitude
Parameters for Diagram Curves
Line Thickness 2
Symbol Scaling Factor 1.5
✓ Use Smoothed Graphics
Line Color (Singlegraph Mode)
Symbol Shape (Singlegraph Mode) No Symbol
Symbol Color (Singlegraph Mode)
Color of Left-Hand y-Axis (Multigraph Mode)
Color of Right-Hand y-Axis (Multigraph Mode)
NaN Indicator
Color for NaN Values
Reset All 📴 🛃 Ok Cancel Help

- On the **Data Array View** tab the user can specify the defaults for the visualization of Data Arrays.
- The user can configure which color lookup tables shall be used by default.
- In addition, for 1D data arrays, the line parameters (colors, thickness, symbols) can be specified.

Global Options
Fields and Sampling Operations View Parameters Performance Other Settings
General View Settings Data Array View Harmonic Field View
Light View Settings I Use Embedding Frame for Light View
Polarization
Show Polarization
Polarization Display Mode Polarization Ellipses
Show Grid Show Arrows Scaling 1
Polarization Plane X - Y - Plane 🔻
Numerical Artifacts
☑ Hide Numerical Artifacts Artifacts Threshold 0.1 %
Reset All 💕 🛃 Ok Cancel Help

- The view of harmonic fields can be preconfigured by the settings available on the Harmonic Field View tab.
- The user can select whether and how initially polarization information (ellipses) shall be shown.
- In addition he can define whether numerical artifacts shall be hidden.

Global Options – Performance

Global Options
Fields and Sampling Operations View Parameters Performance Other Settings
View Performance
Usable Light View
Use Standard Scaling for Complex Amplitude View
Maximum Number of Table Cells for Data Arrays 100000
Array Size and Handling
Default Precision of Arrays Float Precision
Swap Large Field Data on Hard Disc
Field Size Warnings
Warn Before Exceeding Specified Limits
Warning Levels
Maximum Number of Sampling Points per Field 1E+07
Maximum Number of Fields Set Members 400
Guaranteed Amount of Remaining Physical Memory
Multi Core Processing
Use Multiple Cores Number of Cores To Use 6
Use Multiple Cores for Parameter Run Loop
FFT Algorithm
Intel Math Kernel Library FFT O VirtualLab FFT
Reset All 💕 🛃 Ok Cancel Help

- Performance settings can be specified on the Performance tab.
- The user can specify
 - to disable the light view
 - the precision for arrays
 - whether to swap large data on hard disc
 - options for parallelization
 - FFT algorithm to use

Global Options – Other Settings

Global Options
Fields and Sampling Operations View Parameters Performance Other Settings
Default Reference Material
Name Standard Air
Catalog Material
State of Matter Gas or Vacuum v
Path Settings
Path for User Settings (User-Defined Catalogs etc.) C:\ProgramData\LightTra\6.0.0.13\
Path for Temporary Files <u>C:\Temp\</u>
Path for Zemax User Data <u>C:\Users</u> LIGHTTRA\ZEMAX
Error Handling Pop up Warning Messages
Pop up Error Messages
Reset All 📴 🛃 Ok Cancel Help

- On the tab page **Other Settings** the user can enter miscellaneous settings.
- For example it is possible to specify the path to the
 - temporary files
 - Zemax user data (used for Zemax import)

Load and Save of Global Options

- Because of different global default settings it can happen that simulation results differ from PC to PC.
- In order to avoid this problem, the user can save and load configured global options of VirtualLab.
- This allows that users to work on any PC with used defaults.
- It is still possible that results differ from PC to PC, but then it is not due to different VirtualLab settings, but due to different hardware. This cannot be helped by VirtualLab ;-)
- In addition an easy way to reset the settings to the standard configuration is available on the bottom of the edit dialog.





- The edit dialog of the global options allow to specify several defaults within VirtualLab.
- The defaults can be configured for views, performance settings and operations.
- It is possible to load and save the global settings. This allow an easy transfer of the settings onto another computer.