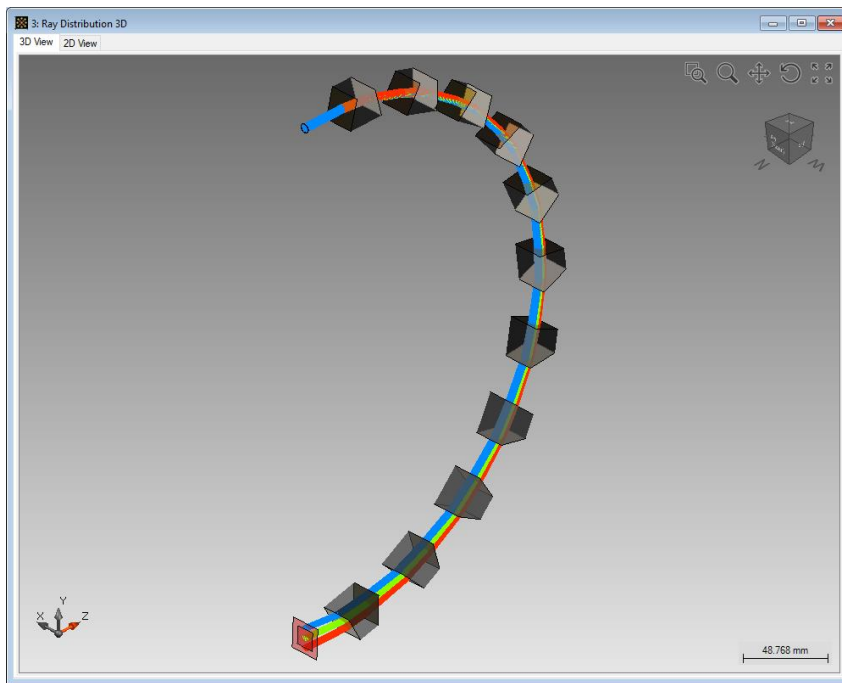


# **Import Optical Systems from Zemax**

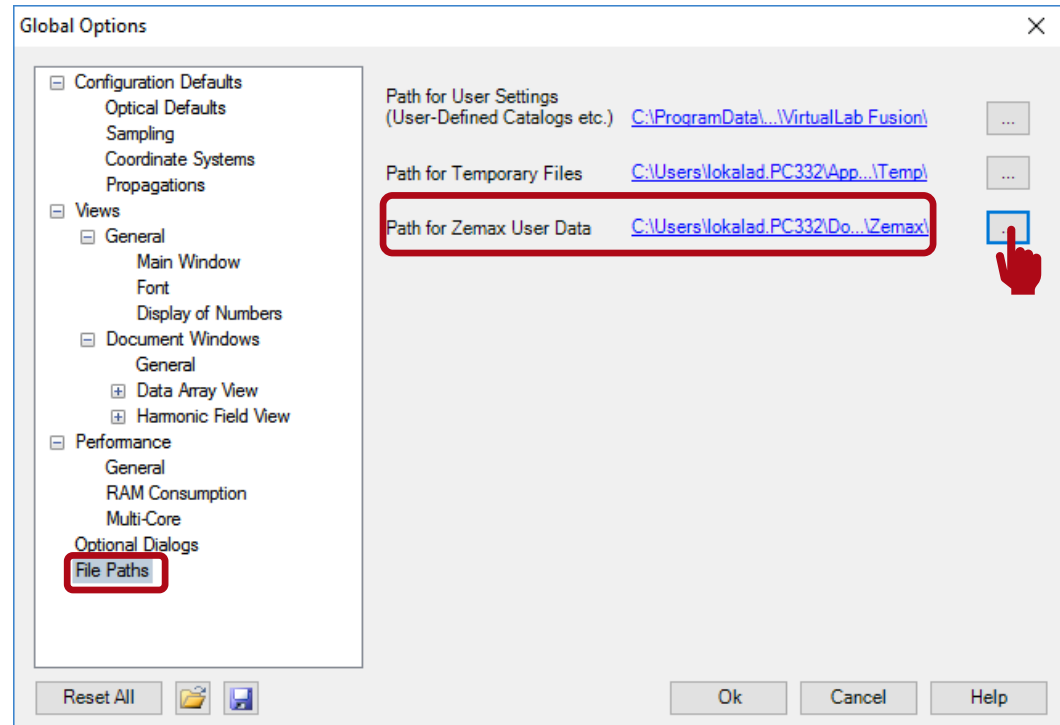
# Abstract



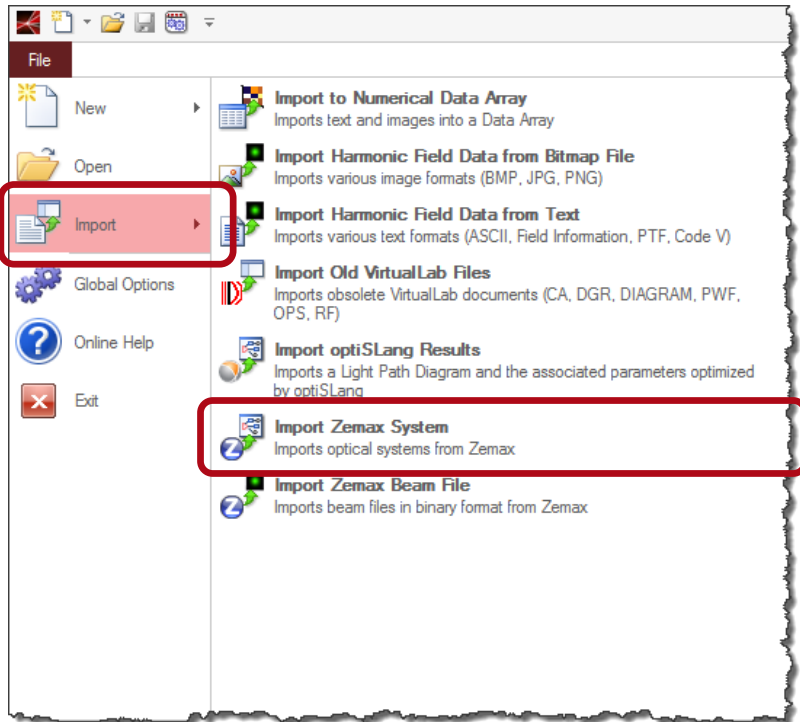
Zemax is a well-distributed ray tracing software. VirtualLab Fusion allows to import optical systems with full 3D position information and glasses from Zemax files. The import enables a user friendly interface between the two software packages. After the import process, the structure data of the optical system will be shown as several components in VirtualLab Fusion. VirtualLab allows to combine single interfaces to components. After importing the Zemax system into VirtualLab it is possible to analyze the optical setup with ray tracing as well as field tracing.

# Pre-processing for Zemax Import

- Zemax installation is required in the user's PC (minimum version 15.5 SP2).
- A valid license for Zemax is required (the dongle needs to be plugged in).
- In the *Global Options Dialog* of VirtualLab Fusion, please set the *Path for Zemax User Data* to the address where the "Glasscat" folder from Zemax is located.



# Import Zemax Lens File

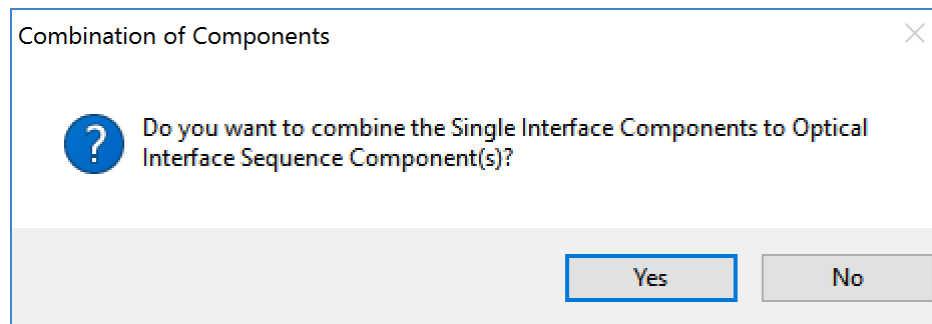


In VirtualLab Fusion, Zemax files can be imported via the following steps:

- *File* → *Import* → *Import Zemax System*
- Then open the Zemax lens sample file with “.ZMX” extension, which contains the structure data.
- Alternatively, you may drag and drop the Zemax file into VirtualLab and perform the import.

# Import Zemax Lens File

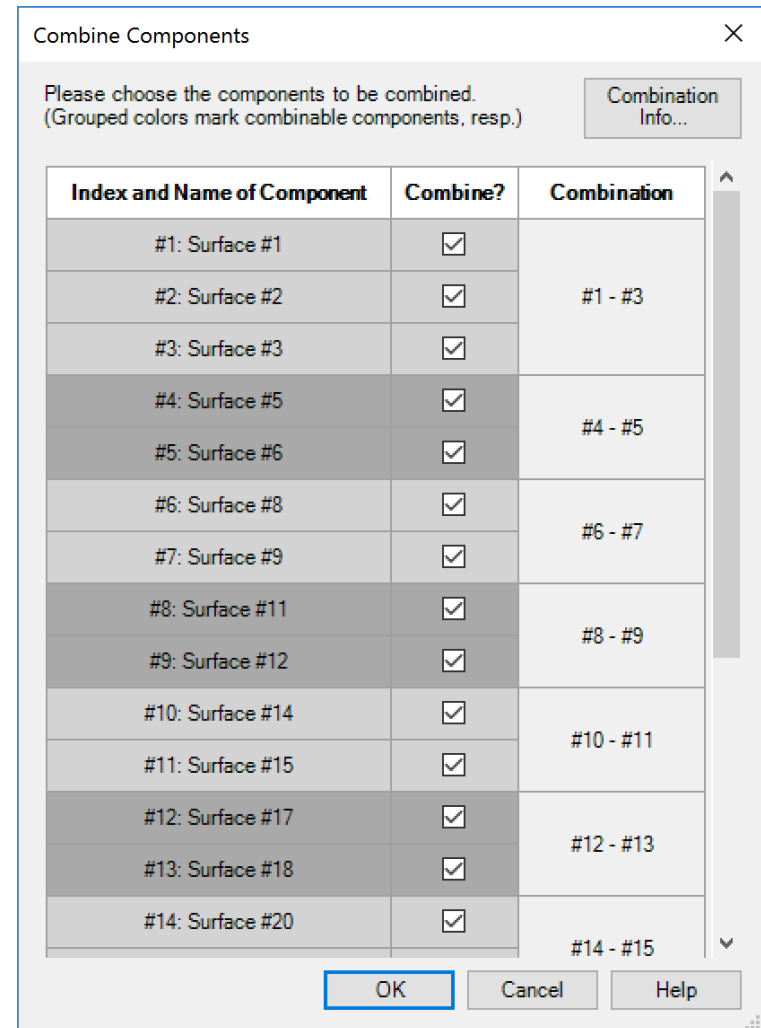
- Every interface in Zemax data corresponds to a *Single Interface Components* in VirtualLab. While importing a system containing more than one interface, a popup window appears asking if the interfaces shall be combined as *Optical Interface Sequence (OIS) Component*.



\* The Zemax sample file used in this use case is downloaded from Zemax Knowledgebase

# Import Zemax Lens File

- By default, VirtualLab will suggest combining the interface between the coordinate breaks into single OIS component.
- The VirtualLab import of Zemax files automatically translate the coordinate information of the Zemax file into the correct information within the light path diagram.

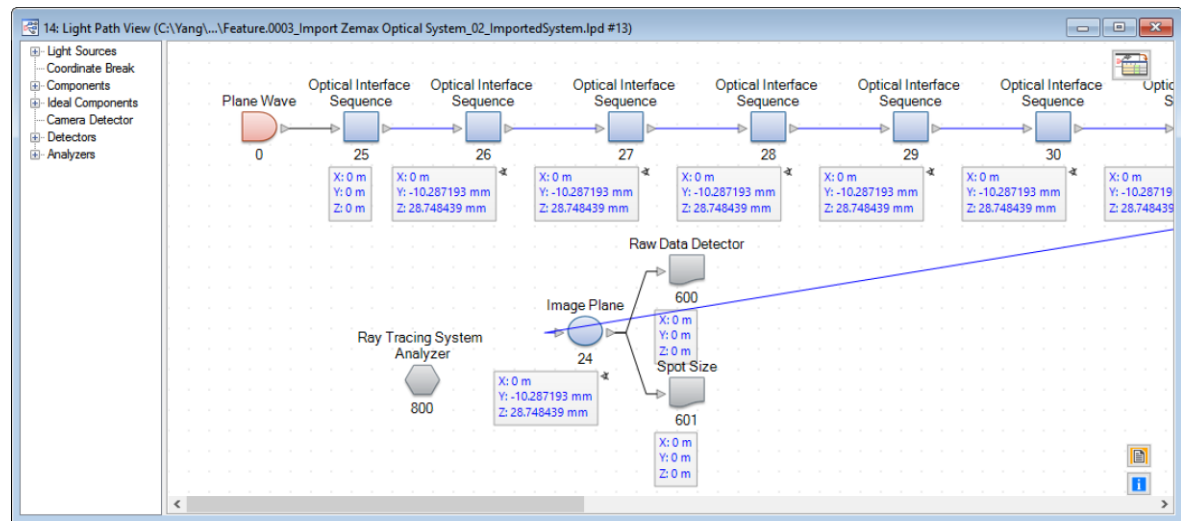


\* The Zemax sample file used in this use case is downloaded from Zemax Knowledgebase

# Construct the Optical System

- After combining the single interfaces, the lens data in Zemax is shown as several OIS components in the *Light Path Diagram (LPD)*.
- A default *Plane Wave* source is added. The used wavelengths of the Zemax file are used to define the spectrum of the VirtualLab source. And the entrance pupil diameter of Zemax defines the input field size of the source in VirtualLab.

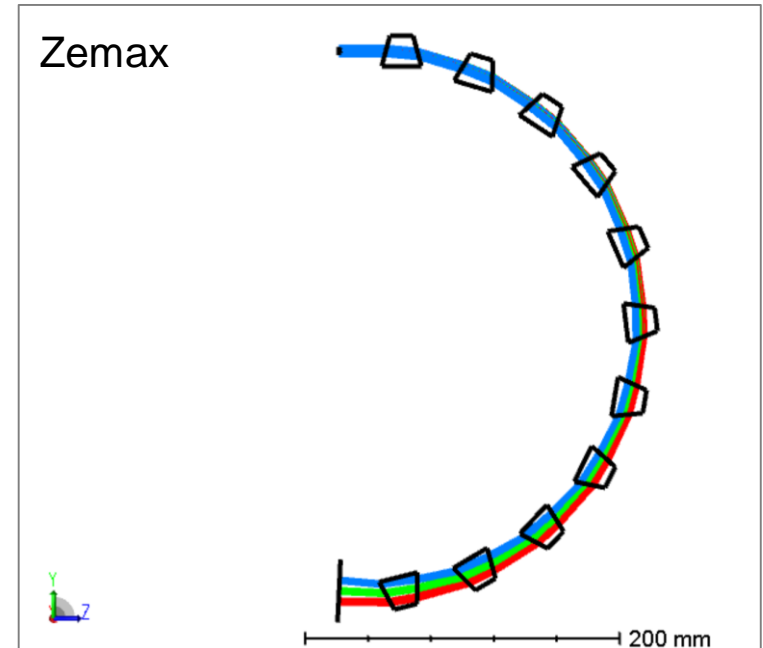
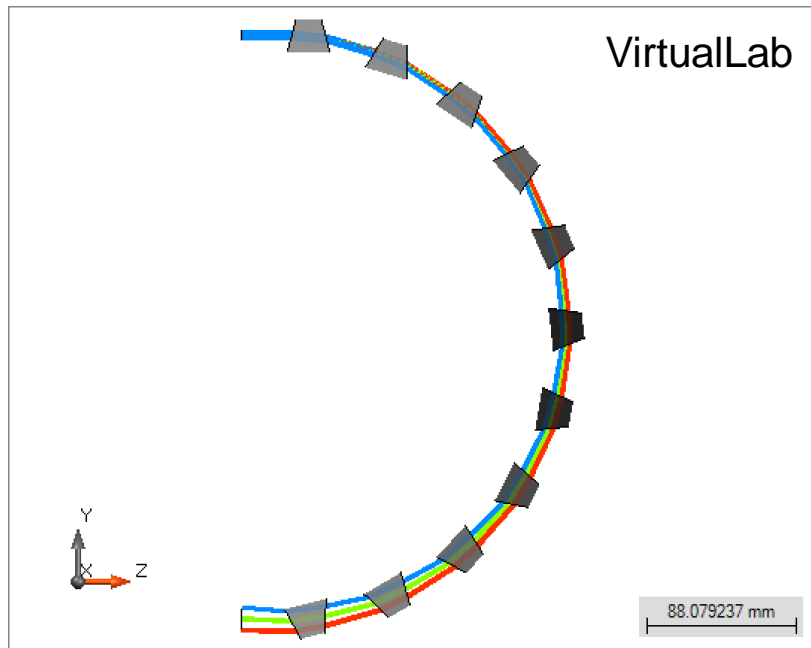
Remark: VirtualLab also adds a *Raw Data Detector* and a *Spot Size* detector right behind the image plane.



\* The Zemax sample file used in this use case is downloaded from Zemax Knowledgebase

# Simulation Result – 3D Ray Tracing

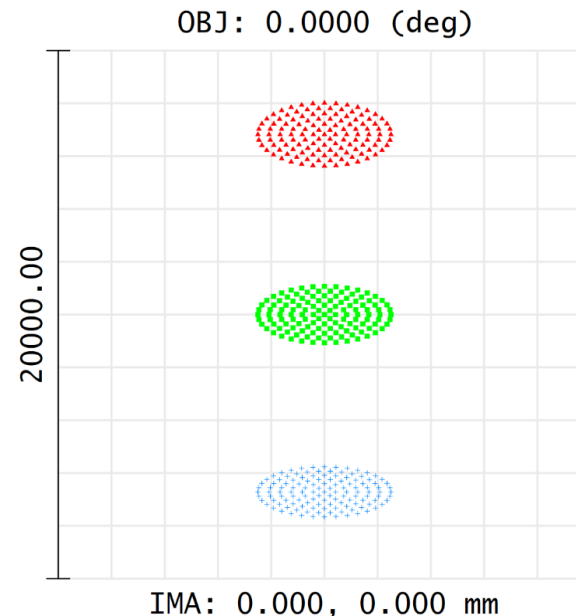
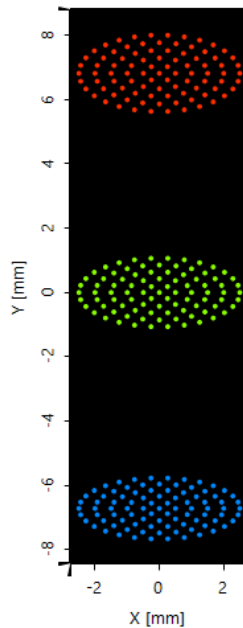
- We begin with the ray tracing system analyzer, and the obtained results in VirtualLab and Zemax are comparable.





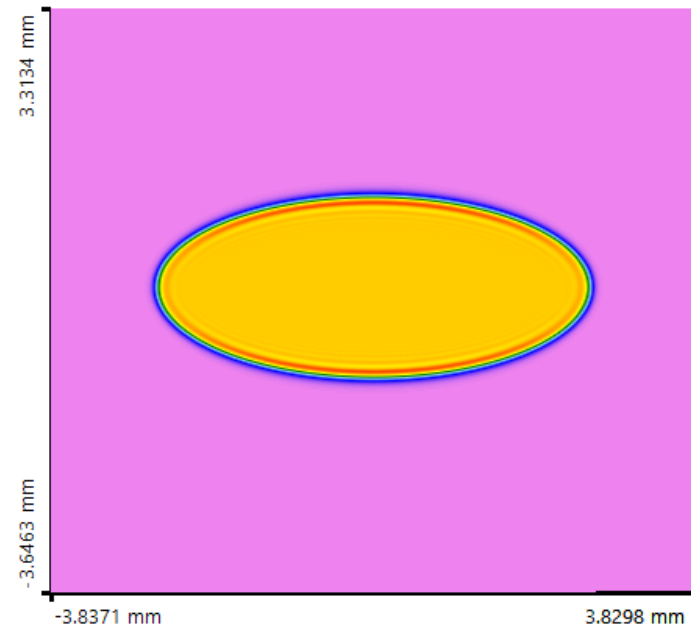
# Simulation Result – 2D Ray Tracing

- Then, by running the ray tracing simulation, the result obtained in VirtualLab is also in accordance with the result of Zemax.
- Dot diagram in VirtualLab
- Dot diagram in Zemax



# Simulation Result – 2<sup>nd</sup> Generation Field Tracing

- To include also field information and additional propagation effects (like diffraction) you simply need to switch to the 2<sup>nd</sup> Generation Field Tracing Engine.
- Intensity Distribution (real color)
- Intensity Distribution (zoomed)



# Document Information

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title	Import Optical Systems from Zemax
version	1.0
VL version used for simulations	7.0.3.4
category	Feature Use Case

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