UseCase.0015 (1.0)

# Real Components in VirtualLab

**Keywords:** structure, propagation, interface, medium

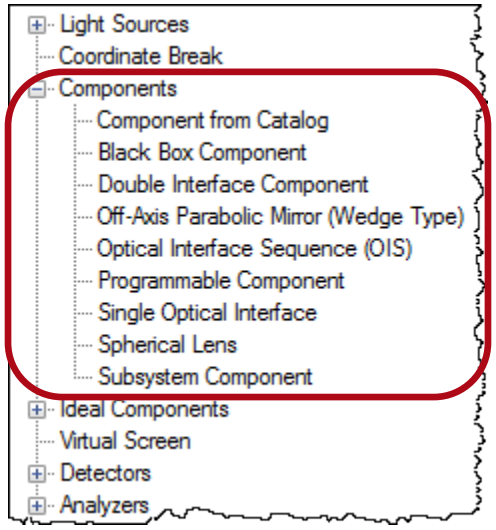
# Description

- VirtualLab differentiats between idealized and real components.
- Real components have a real structure definition and the propagation through the structure can be defined.
- This use case shows how real components can be added to the light path diagram.
- It also demonstrates the edit options for real components.
- Further information on the setup of the propagation techniques to analyze the component will be discussed.

# Real Components

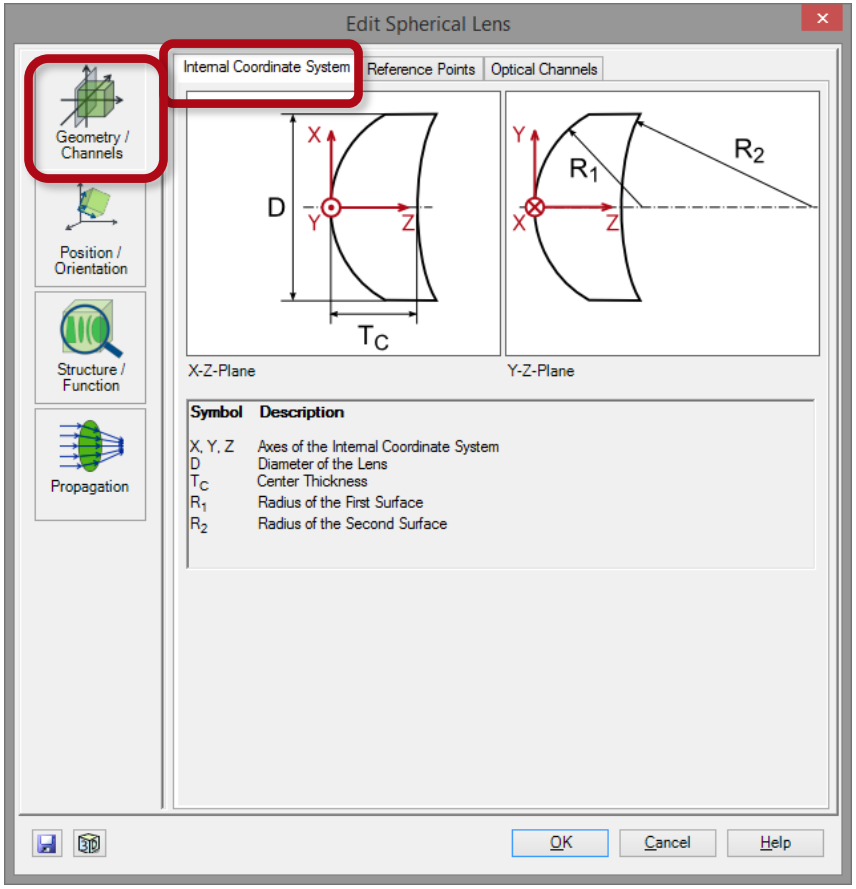
- Real components contain specifications of:
  - Component interfaces, media and coatings
  - Orientation of components
  - Relative position
  - Reference points
  - Tolerances
- Light propagation through a component structure is simulated by specific models. Available models depend on the component type.
- Real components have one input channel and may have have multiple regarded output channels.

# Add Real Components to Light Path Diagram



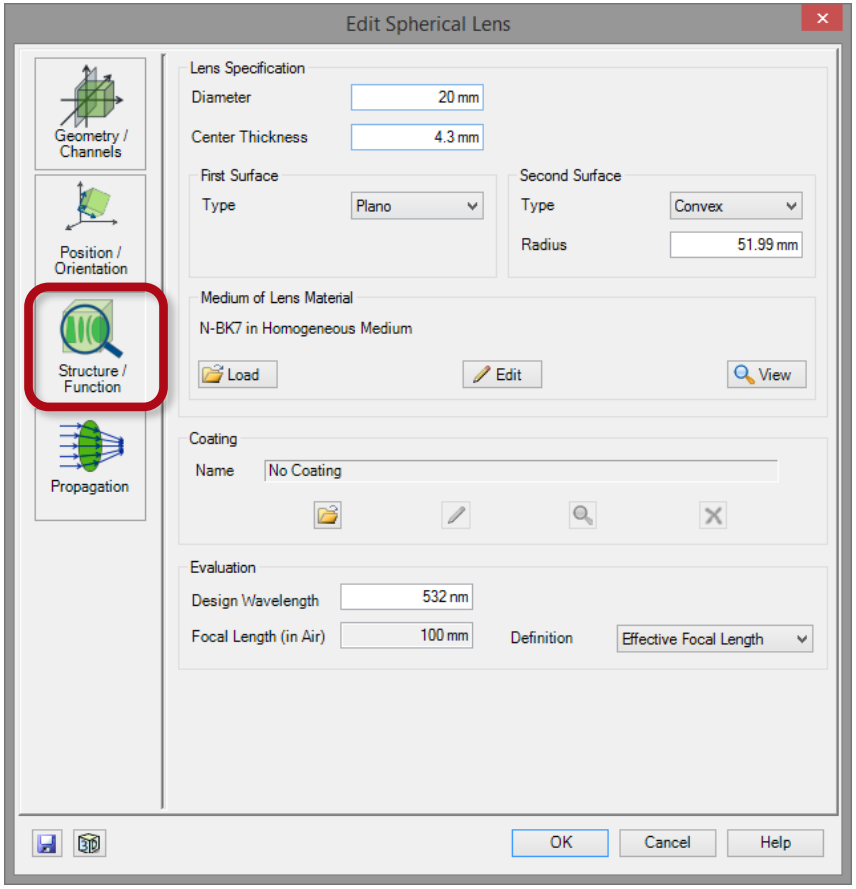

- VirtualLab allows to add real component to the light path diagram.
- The following real component are often used within the LPD:
  - Single Interface
  - Spherical Lens
  - Optical Interface Sequence
  - Off-Axis Parabolic Mirror
  - Programmable Component
- It is also possible to access the component catalog.

# Real Components – Geometry




- Within the edit dialog of each real component the user can access the geometry information.
- The user gets an overview on the position and orientation of the internal coordinate system, on available reference points and on optical channels of the component.

# Real Components – Structure (Lens Component)

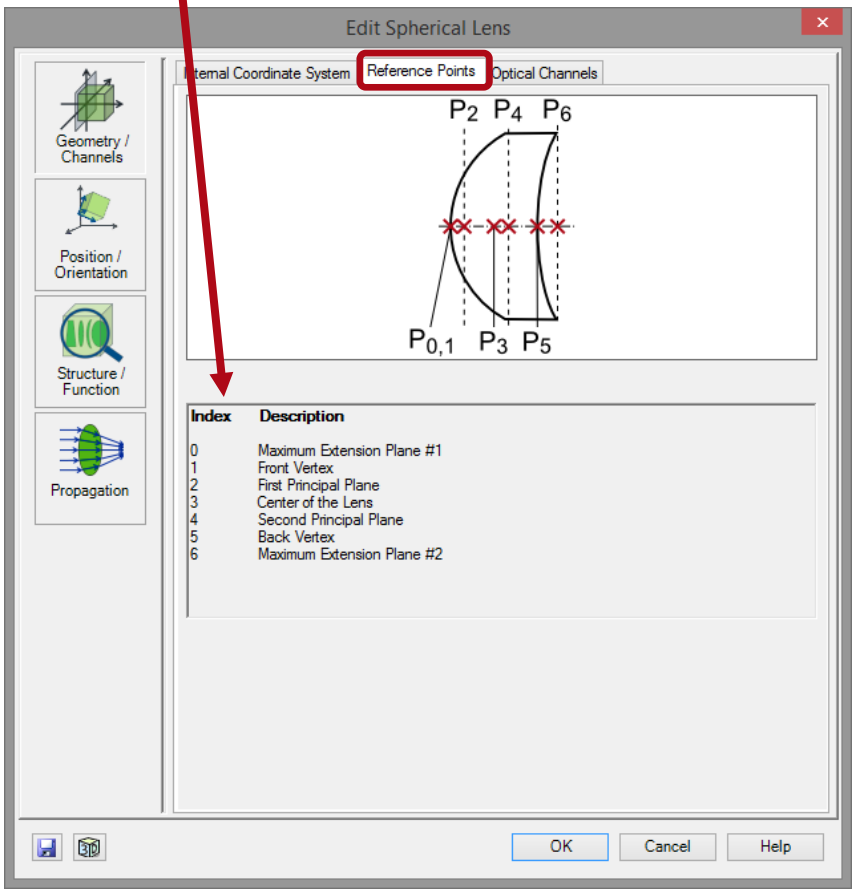


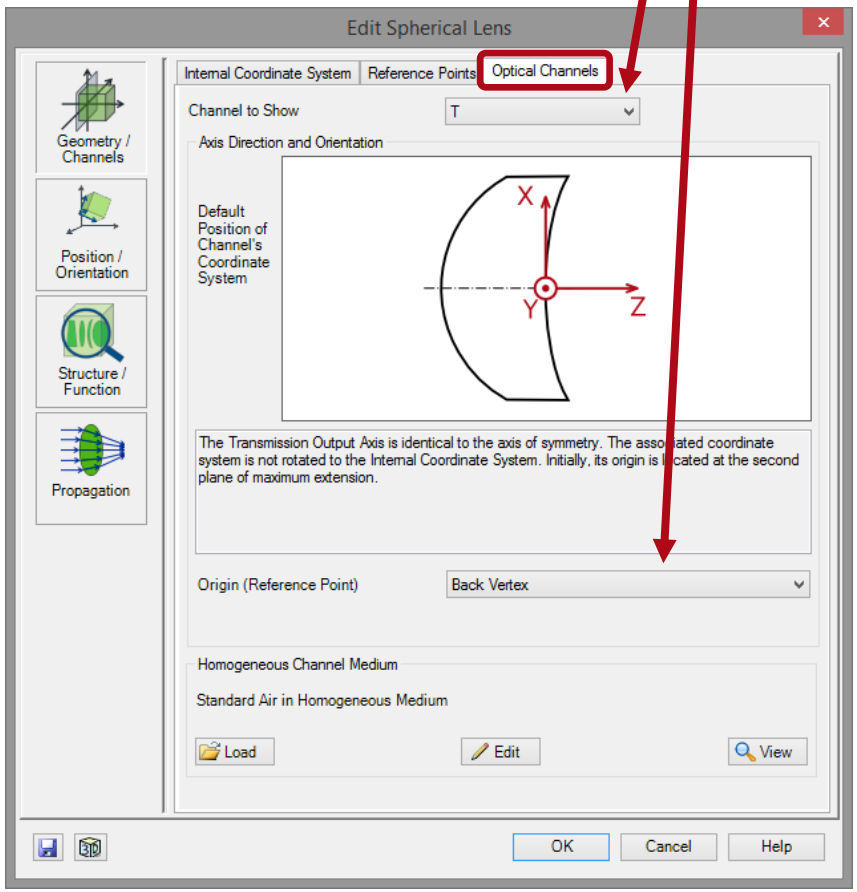

- The structure of real component is edited on the Structure/Function tab of the edit dialog.
- The structure definition of each type of real component is different.
- On the left side the tab page for the structure definition of the spherical lens is shown

# Reference Points & Optical Channel

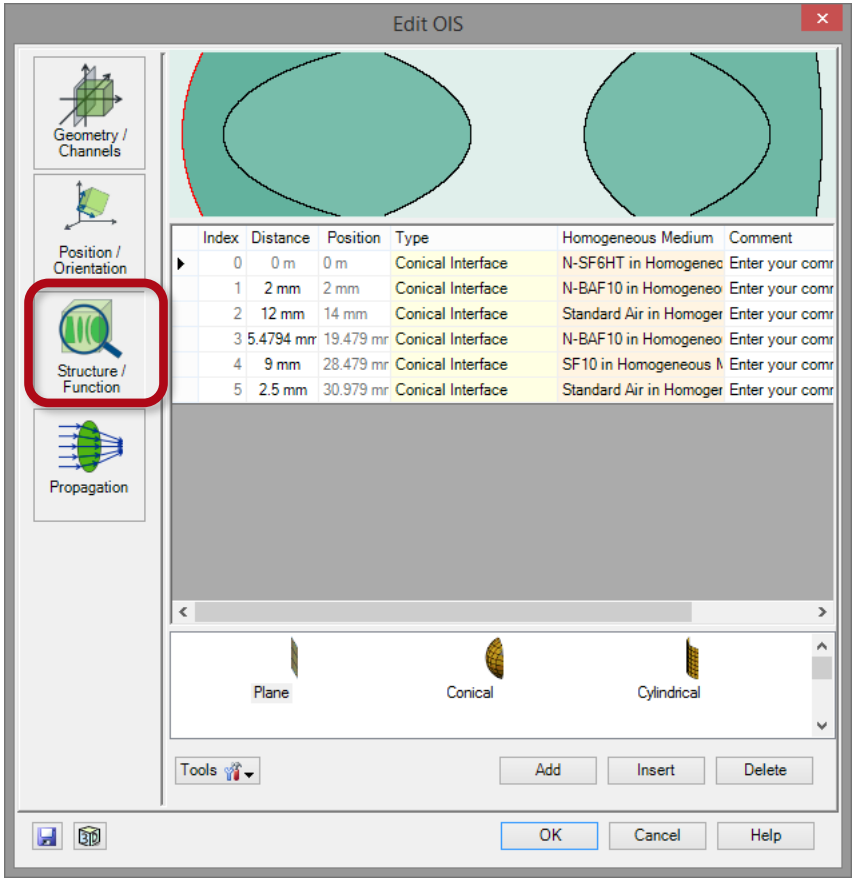
Lists all available Reference Points

Select channel (Input, T=Transmission, R=Reflection) whose parameters should be shown/specified



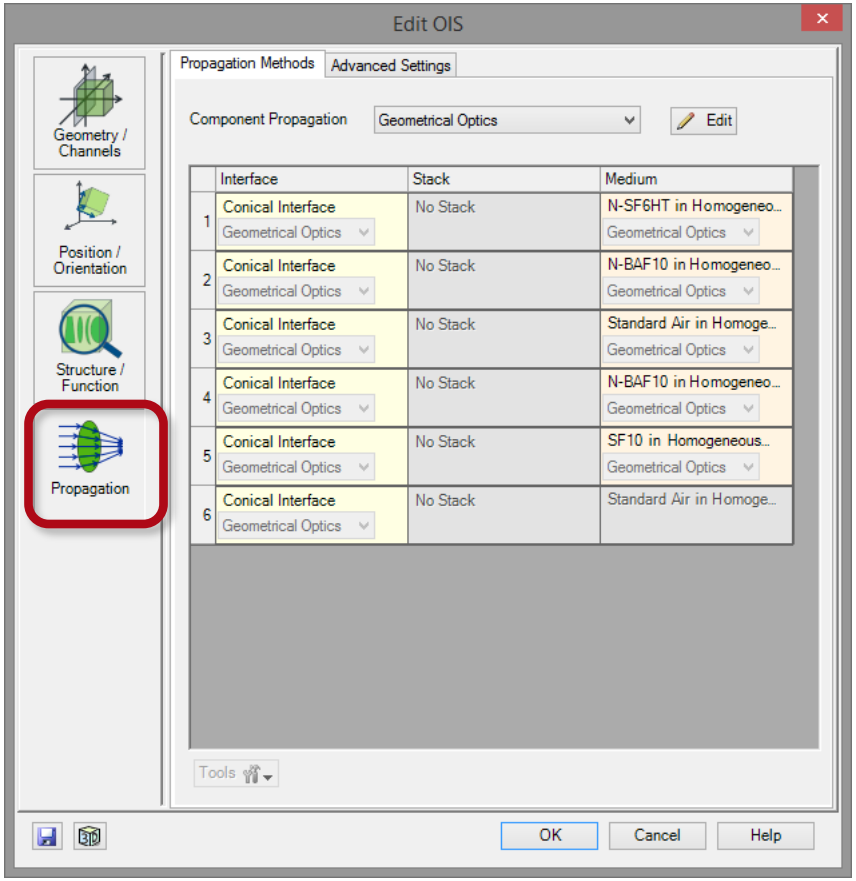



# Real Components – Structure (OIS Component)



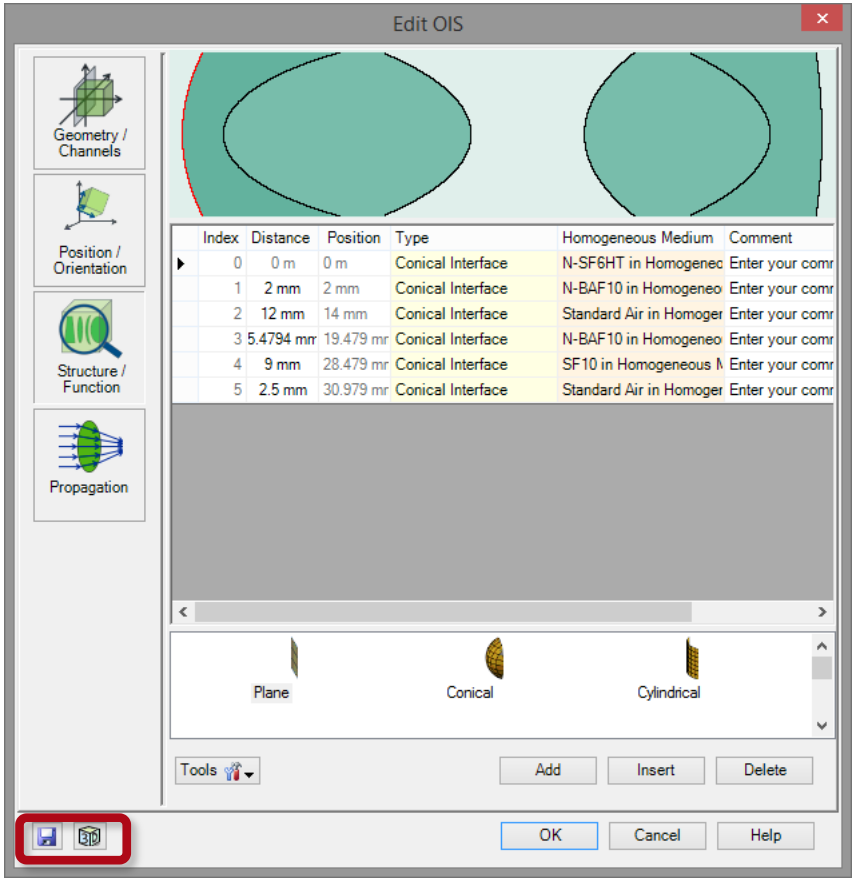

- The picture on the left side shows the structure/function tab page of the optical interface sequence (OIS) component.
- In case of an OIS a list of interfaces with associated distances, types, media and comments can be specified.

# Real Components – Propagation



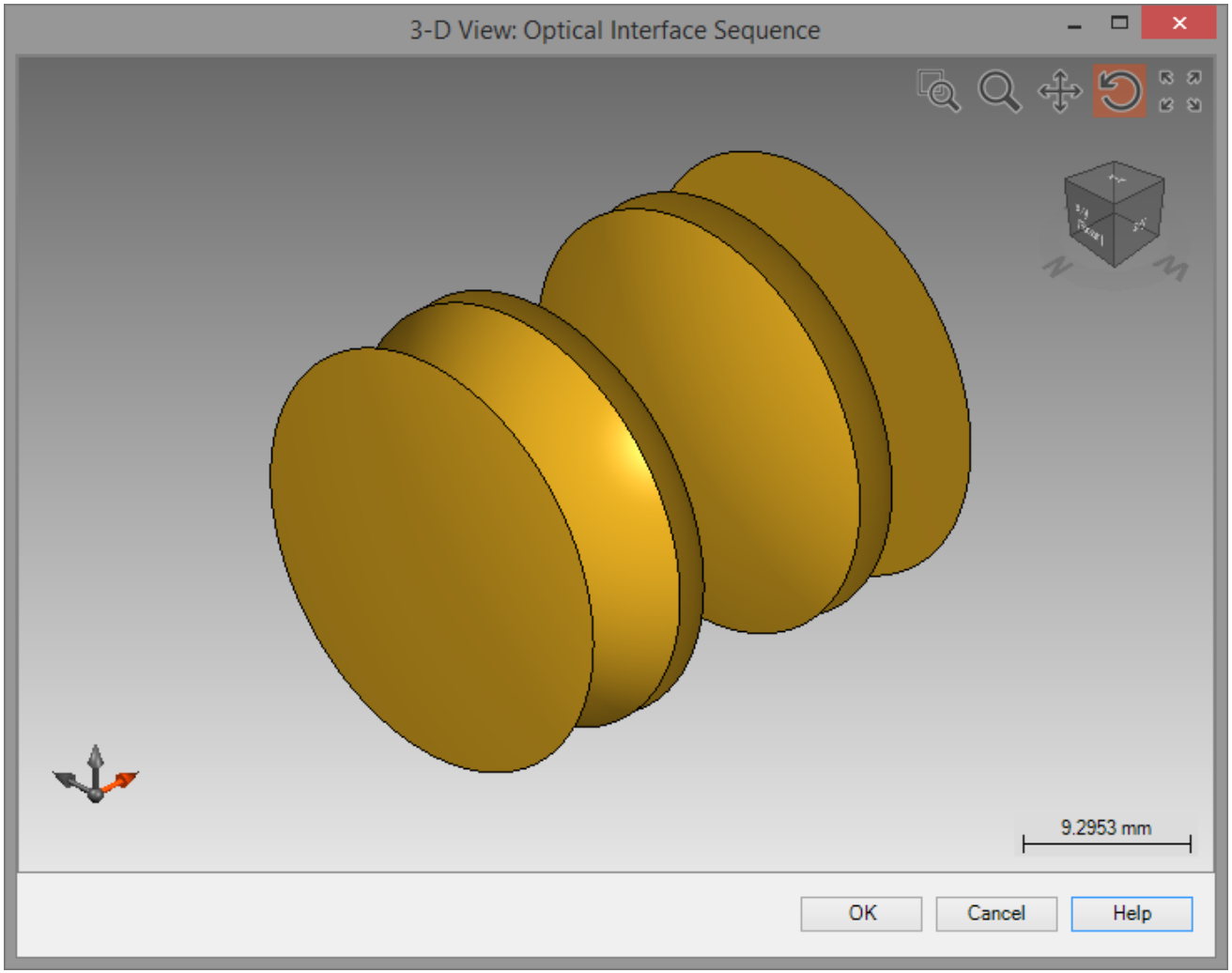

- On the page Propagation the user can select the propagation method to be used to analyze the component.
- In addition the user can define numerical and also physical parameters of the propagation operator.

# Real Components – Tools




- At the left bottom of the edit dialog of a real component some tools can be accessed.
- The following tools are available for all components:
  - Save (to catalog)
  - View (show preview)

# Preview of an OIS Component



# Summary

- Real components can be used to define and analyze real structures which consists of optical surfaces and optical media (homogeneous and in-homogeneous).

- The user can define which propagation technique shall be used for the analysis of the component and can also configure the numerical and physical parameters of the propagation operator.

- The preview allows a visualization of the 3D structure of the defined component.