UseCase.0015 (1.0)

Real Components in VirtualLab

Keywords: structure, propagation, interface, medium
Description

• VirtualLab differentiates 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 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.