

## VirtualLab Fusion Training Course

# Introduction to VirtualLab Fusion

**Location:** Jena, Germany

**Date:** 23 – 24 September 2019

**Time:** 9:00 – 17:00

**Registration:** [sales@lighttrans.com](mailto:sales@lighttrans.com)

**Requirements:** Users with limited or no knowledge of VirtualLab, no laptop is required

The software training gives an introduction to the principles of the innovative optical design methods of VirtualLab. Components of VirtualLab's user interface are introduced and the different types of documents are discussed in detail. Participants learn step by step about components, sources and detectors of VirtualLab. The setup and the simulation of optical systems will be illustrated on various laser systems. The goal of the course is that participants learn how to model and simulate optical systems in VirtualLab. Discover the fast physical optics concept and how to benefit from it through our user-friendly GUI!

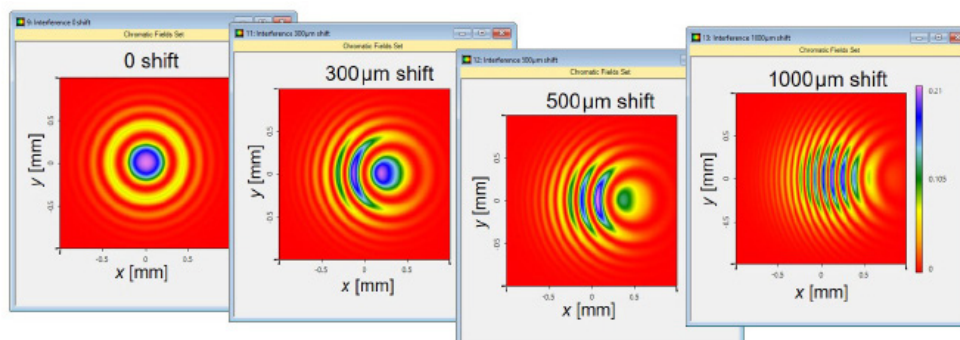
**Short Overview (daily program is given on subsequent pages):**

### Brief overview and introduction to VirtualLab documents, GUI and usage

- Brief overview of the theory behind the algorithm
- Introduction to the concepts of field and ray tracing for the simulation of light in optical systems

### First steps with VirtualLab Fusion: hands-on examples of assorted topics

- Simulation of paraxial and non-paraxial lens systems
- Polarization of light
- Calculation of interferograms and simulation of interferometer:



*Calculation of interference pattern including element shift for Mach-Zehnder interferometer*

## Topics day 1

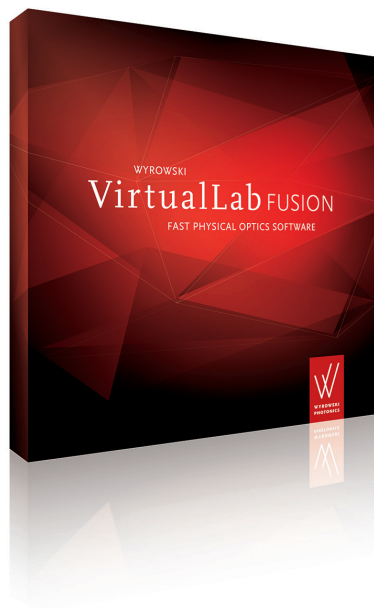
### Brief overview and introduction to VirtualLab documents, GUI and usage

- Electromagnetic light model
- Numerical data storage in VirtualLab
- Visualization of light distribution
- Fast physical optics concept to model light propagation in free space and through components
- Field tracing concepts including fast physical optics
- Light propagation methods through free space and components
- Evaluation of light distributions using detectors, physical and numerical modeling errors
- Basic VirtualLab documents and windows, such as the optical setup (OS), parameter run, VirtualLab explorer, property browser

## Topics day 2

### First steps with VirtualLab Fusion: hands-on examples of assorted topics

- Aberration analysis
- Import of lens data from Zemax
- Vector propagation effects in lens systems
- Investigation of focal regions
- Simulation of point spread function (PSF) and modulation transfer function (MTF)
- Laser systems and space frequency filters
- Propagation of beams through components using different optical models
- Analysis of laser beam parameters
- Analysis of diffraction effects at apertures
- Definition of coherent laser beams having arbitrary uniform polarization
- Variation of polarization over the beam diameter
- Polarization state over beam diameter
- Calculation of interference patterns of two or more light distributions
- Modeling of interferometers with a coherent light source



The course is based on the latest release of VirtualLab Fusion available at the course time. Depending on the group's dynamic, the order of the listed topics and their time assignment might vary.

Request a quote for this training via [sales@lighttrans.com](mailto:sales@lighttrans.com)