

## Training Course

# VirtualLab Fusion Technology and Applications: Introduction to VirtualLab Fusion

**Date:** 10 – 11 February 2020

**Time:** 09:00 – 17:00

**Location:** Premiere Workspaces, San Jose, CA, USA

**Intended audience:** Anybody interested in the technology and usage of VirtualLab Fusion

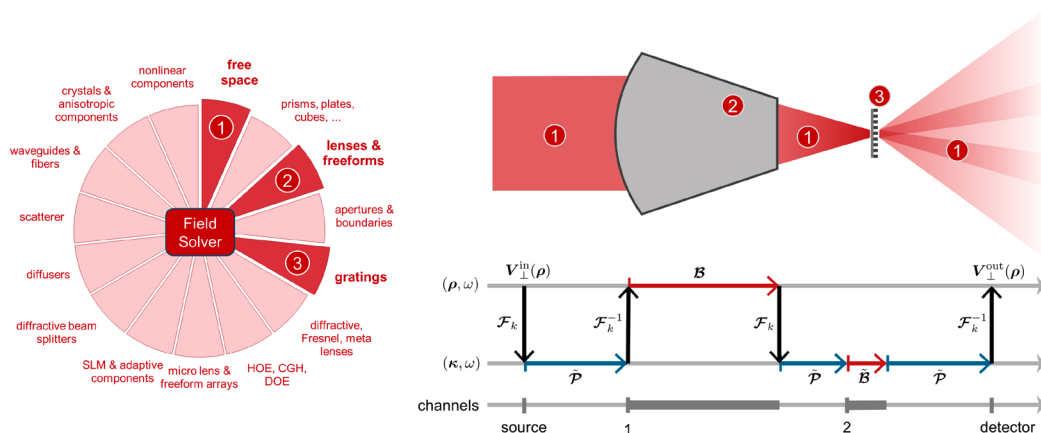
**Equipment:** Please bring your own laptop (Windows), with VirtualLab Fusion installed (a current trial version also valid)

**Request an offer:** [Click here for our online form](#)

Nowadays physical-optics principles are of ever-growing importance for the analysis and design of advanced optical devices and systems. Come to our training course to learn the concepts of the Fast Physical Optics technology, on which VirtualLab Fusion is based. We show you how to benefit from VirtualLab Fusion in your daily work.

## Learning Outcomes

- Discover essential physical-optics effects and phenomena in modern optical systems and how to include them in your modeling and design.
- Dive right into the software with hands-on exercises from typical applications (e.g. lens systems, laser optics, fiber coupling, interferometry, microscopy), accompanied by the corresponding workflows.
- Build up your optical system and perform an analysis and design thereof with different modeling technologies and optimization tools in VirtualLab Fusion.



## Agenda

### DAY 1

#### 09:00 – 10:30 | KICK-OFF

- Key messages for theoretical background
- Building up first optical system
- Using different simulation engines
- Visualization of results and parameter scan

#### 10:30 – 12:00 | LASER SYSTEMS

- Gaussian beam properties
- Analysis of depth of focus
- Polarization and vectorial effects

#### Lunch Break

#### 13:00 – 14:30 | MICROSCOPY

- Import from Zemax OpticStudio®
- Wavefront, aberrations, and their influences on focal spots
- PSF & MTF detectors

#### 14:30 – 16:00 | FIBER COUPLING

- Calculation of coupling efficiency
- Parametric optimization of fiber coupling lenses
- Tolerancing

### DAY 2

#### 09:00 – 10:30 | SOURCE MODELING

- Mode decomposition concept
- Modeling of femtosecond pulses

#### 10:30 – 12:00 | CHANNEL CONCEPT

- Non-sequential field tracing
- Examples of typical optical interferometers

#### Lunch Break

#### 13:00 – 14:30 | SELECTED SOLVERS IN FIELD TRACING

- Polarization conversion in a uniaxial crystal
- Thermal lens effect in a laser system
- (more)

#### 14:30 – 16:00 | CUSTOMIZATION AND CROSS-PLATFORM SIMULATION

- Introduction to programming in VirtualLab
- Cross-platform simulation with Python/MATLAB



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 might vary.