

## FREE VirtualLab Fusion Seminar

# Beyond Ray Tracing: Innovative Optical Design with Fast Physical Optics

**Location:** Faculty of Applied Sciences, Building 22, Delft, Netherlands

**Date:** 8 October 2018

**Time:** 9:00 am – 4:00 pm

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

Modern optical technology has so branched out from traditionally understood lens systems that ray optics often falls short when it comes to simulating and designing cutting-edge optical systems with acceptable accuracy. A software package that yields fast physical optics simulation results alongside ray tracing then becomes, not a choice, but a necessity. This is precisely what VirtualLab Fusion offers: come to our free seminar to discover the fast physical optics concept, how to benefit from it through our user-friendly GUI, and an overview of what it can provide in a wide-ranging set of applications!

## Seminar Schedule

### Concepts, techniques, and customization

9:00 am – 12:00 am

- Introduction to the theory and concepts of fast physical optics
- Modeling techniques in VirtualLab Fusion
- Design methods for diffractive, refractive, and hybrid optical components and systems
- VirtualLab Fusion user-interface concept, tools, customization and programming

### Applications and software demonstrations

1:00 pm – 4:00 pm

- Discussion and demonstration of application examples out of a collection of numerous VirtualLab Fusion use cases
- Insights into the functionality and usage of VirtualLab Fusion through use cases
- Questions & answers on how VirtualLab Fusion can provide the solution you seek

LIGHT  
SHAPING



OPTICAL  
METROLOGY



IMAGING  
SYSTEMS



LASER  
SYSTEMS



VIRTUAL AND  
MIXED REALITY



## VirtualLab Fusion Technologies

In the seminar we will discuss VirtualLab's modeling techniques — a very general approach to optical modeling facilitates the combination of many different tools in a single platform.

- Lasers, LD, VCSEL and LED sources, fs pulses
- Aberration and PSF/MTF
- Radiometric and photo-metric detectors
- Diffraction integrals
- Fast k-domain operators
- RCWA grating modeling
- Local Maxwell solvers
- Thin element approximation (TEA)
- Beam propagation method (BPM)
- Coating S matrix
- GRIN media solver
- Crystal modeling
- Waveguide solver
- Mie scattering
- IFTA design algorithm
- Parametric optimization
- Interpolation techniques
- optimization options and investigations of parameter variations

## VirtualLab Fusion Applications

Together with the seminar participants we will select the applications and software use cases of most interest. The application examples include but are not restricted to:

- Laser beam delivery, scanning, LIDAR systems
- Freeform surfaces for imaging and light shaping
- Diffractive, Fresnel and meta-lens modeling and design
- Ghost image investigation
- High-NA diffractive beam splitting
- Diffractive diffuser for illumination
- Shaping light of VCSEL arrays
- Microlens arrays
- Spatial light modulators
- Microscopy
- Spectroscopy
- Telescopes
- Interferometry
- Grating optimization
- Fiber coupling
- AR/MR/VR/HUD systems

