WYROWSKI

VirtualLab FUSION

FAST PHYSICAL OPTICS SOFTWARE

Free Optical Design Seminar

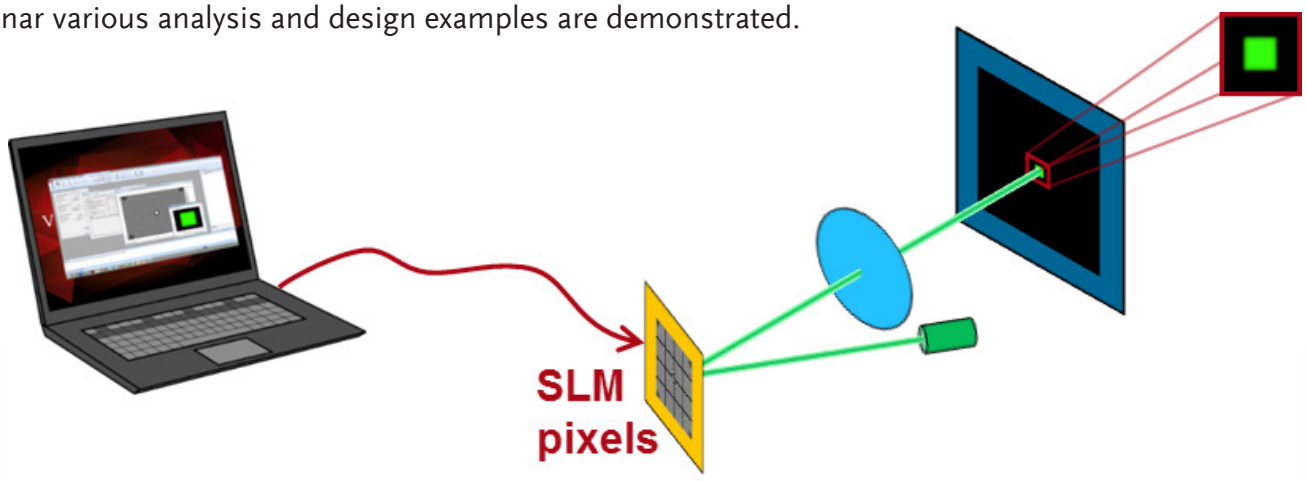
Analysis and Design of Diffractive and Micro-Optical Systems with VirtualLab Fusion Software

Date: Friday, February 2, 2018, 09:30 – 16:15
Location: Near Moscone Convention Center, San Francisco, CA, US
Speaker: Ms. Huiying Zhong (LightTrans International UG)
Registration: service@lighttrans.com

We invite you to our free seminar including lunch – see the seminar agenda on the next page. Registration by email with your name, company, address, phone and email address is required.

It is well understood that physical optics is needed for reliable analysis and design of systems which include gratings, diffractive optical elements and micro-optical components and modules. But also beyond such systems the benefit of a sophisticated physical optics approach in optical design becomes more obvious when dealing with, for example, fs pulses, partially coherent light, interference and diffraction effects. Moreover, ray tracing is naturally included in physical optics as a well-defined subset. Thus, the application of physical optics in optical design does not entail having to give anything up, but simply adds new techniques and a deeper understanding that facilitates the innovation of your optical design. However, the immense value of physical optics in optical design must be made available in practice via a numerically fast physical-optics technology. VirtualLab Fusion enables fast physical optics with its new 2nd gen field-tracing technology. The basic idea behind it is the sequential and non-sequential interconnection of an ever-increasing number of optimized physical optics modeling techniques.

In the seminar an overview of source, propagation and detector models which are available in VirtualLab Fusion is presented. An overview of new techniques coming in 2018 is also given. In the second part of the seminar various analysis and design examples are demonstrated.



Design and simulation of required phase values for actuating a spatial light modulator (SLM) module in order to generate a top-hat.

Registration via service@lighttrans.com
with your name, company, address, phone number and email address
The number of participants is limited.

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Detailed Schedule

09:30 – 10:45 Sequential and non-sequential modeling. In VirtualLab Fusion light is represented by vectorial fields (physical optics) and rays (ray optics). Fields and rays are propagated from the source through the components and to the detectors in a sequential or non-sequential way. Physical optics propagation to components and detectors encompasses fast implementations of diffraction integrals like Debye, Richards-Wolf, Rayleigh-Huygens, Fresnel and Fraunhofer and generalizations of them with a fully automatized selection by VirtualLab Fusion.

10:45 – 11:00 Coffee break

11:00 – 12:30 Propagation techniques. For a vectorial physical-optics propagation through lenses, freeform surfaces, lens arrays, crystals, gratings, etalons, waveplates, microstructures, gratings, scattering surfaces, GRIN media, and diffractive optical elements VirtualLab provides a bundle of techniques like local boundary operators (LPIA), coating matrix, Fourier Modal Method (FMM), perfectly matched layer, split-step-type solvers, Mie scattering, Thin Element Approximation (TEA), and GRIN media propagation.

12:30 – 13:30 Lunch (included in the free seminar)

13:30 – 14:00 Source and detector modeling. The modeling of sources like cw and pulsed laser sources, laser diodes, VCSEL's, and LED's in VirtualLab Fusion is presented. The unsurpassed flexibility of the definition of detector functions is demonstrated at examples like radiometry and photometry detectors, wavefront analysis, Stokes vector, polarization, and pulse duration.

14:00 – 14:30 Imaging and laser systems. Importing lens systems into VirtualLab Fusion enables sequential and non-sequential ray and physical optics analysis and optimization, including a sophisticated investigation of the PSF and MTF and of the appearance of ghost images by internal reflections. The inclusion of gratings, diffractive lenses and HOEs is shown together with its analysis by FMM.

14:30 – 14:45 Coffee break

14:45 – 15:30 Light shaping. The design of DOEs by established algorithms is demonstrated for the design of a diffractive beam splitter and a diffuser for light shaping. The specific challenges for the design of non-paraxial beam splitters for pattern generation of mobile devices are addressed. Laser beam shaping by diffractive and refractive elements is presented. The use of SLMs alongside VirtualLab is shown.

15:30 – 16:15 Waveguides for HUD and NED displays. The usage of waveguide plates in combination with gratings seems to be a very promising candidate in mixed reality devices. The design and analysis of such waveguide layouts requires the electromagnetic analysis of surface and volume gratings together with a non-sequential propagation of numerous fields through the waveguide including energy, wavefronts, polarization and multiple aperture effects, all of which is enabled by VirtualLab Fusion.

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