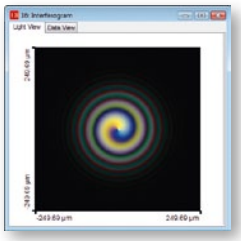
VirtualLab™ 5

Starter Toolbox

Unified modeling for nano, micro and macro optics



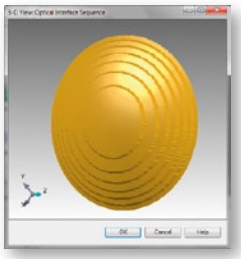
Interferogram of a polychromatic spherical wave and a vortex wave.

The VirtualLab™ Starter Toolbox enables the simulation of laser optics, micro optical systems, diffractive optics, interferometers, imaging and illumination systems. Optical systems may contain refractive, diffractive, hybrid, Fresnel and GRIN lenses, diffractive optical elements, diffusers, beam shapers, diffractive beam splitters, computer generated holograms, phase plates, elements with free form surfaces and micro lens arrays. Based on unified optical modeling, the light propagation can be modeled using different propagation models ranging from geometrical optics to physical optics.

VirtualLab™ provides parametric optimization for optical systems, e. g. laser systems. Diffraction, interference, polarization effects and aberrations can be taken into account during the optimization.

The unique customization features of VirtualLab™ enable the simulation of user defined surface profiles, light sources, transmissions and index modulated media just by entering a formula. In addition various import filters allow to import surface and laser data from other software and measurement devices.

Your Benefit



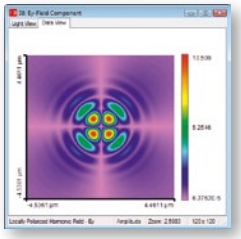
Hybrid surface of bifocal lens.

- Modeling of lenses, micro and diffractive optical components on one platform.
- Optical modeling from geometrical to physical optics including diffraction, interference, aberrations, polarization and vectorial effects.
- Simulation of temporal and spatial partially coherent light sources as for example LEDs, Excimer lasers and multimode lasers.
- Modeling of ultrashort pulses.
- Components with customized surface profiles and index modulated media.
- Parametric optimization for laser systems.

LightTrans

Starter Toolbox

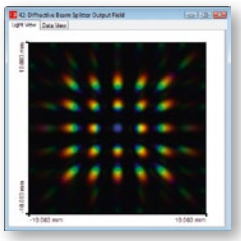
Selected Features



Y-component of the electrical field in the focal region of a lens with a numerical aperture of 0.68.

Simulation of high NA laser and imaging systems

The Starter Toolbox enables the investigation of paraxial and non-paraxial laser and imaging systems including diffraction effects, interference effects, aberrations, polarization and vectorial effects. Lens data can be imported from Zemax. Programmable interface, light source, transmission and medium allow to customize optical components just by entering a formula. The toolbox allows for example the evaluation of the fiber coupling efficiency, beam parameters, PSF, MTF and power density in focal regions.



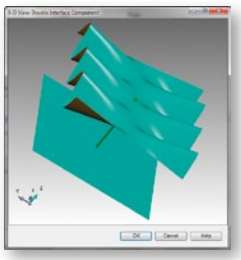
Far field of a diffractive beam splitter illuminated by polychromatic laser light.

Simulation of micro and diffractive optical components

You can analyze the optical effects of diffractive, hybrid, Fresnel and GRIN lenses, diffractive optical elements, diffusers, beam shapers, diffractive beam splitters, computer generated holograms, phase plates and micro lens arrays. Simulations of light propagation include diffraction, interference, stray light, efficiency, uniformity, signal-to-noise ratio (SNR) and zero order intensity. Measured data of micro structured height profiles can be imported from ASCII and bitmap files into VirtualLab™.

Modeling of ultrashort pulses

VirtualLab™ enables the modeling and propagation of ultrashort pulses through laser systems. The propagation includes diffraction effects, interference effects, aberrations, polarization and vectorial effects. The pulse shape can be visualized depending on the lateral laser beam position.



Grating component with customized sinusoidal surface profile.

Simulation of temporal and spatial partially coherent light

Several real light sources, as for example, LEDs, Excimer lasers, multimode lasers, thermal sources generate temporal and spatial partially coherent light. The coherence properties of real light distributions can be included in simulations. This is important especially for optical systems whose optical functions are based on diffraction and interference effects.

Parametric optimization

The parametric optimization allows to optimize a great variety of optical systems e. g. laser systems. Based on field tracing techniques and an electromagnetic representation of light, VirtualLab™ provides fully vectorial results as input for a broad set of merit functions that define the target of optimization problems.

More information concerning this toolbox including a list of all available features is shown on our website **www. lighttrans.com**

LightTrans GmbH, Wildenbruchstraße 15, D-07745 Jena, Germany
Phone +49. 36 41. 66 43 53, Fax +49. 36 41. 66 43 54, service@lighttrans.com

V3 – 05/2011