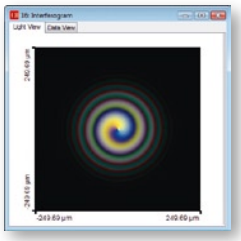
VirtualLab™ 4

Starter Toolbox

Modeling of optical systems with micro and macro structured optical components



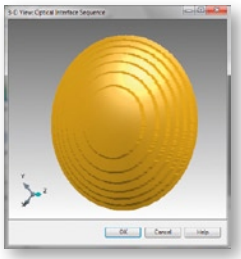
Interferogram of a polychromatic spherical wave and a vortex wave.

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.

The light propagation through all of these components can be modeled using different propagation models from geometrical optics to physical optics, all of which run on a single software platform. Propagation models can handle coherent monochromatic light, polychromatic light, spatial and temporal partially coherent light as well as ultra short pulses.

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



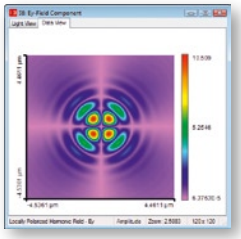
Hybrid surface of bifocal lens.

- Modeling of lenses, micro and diffractive optical components on one software 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 ultra short pulses.
- Components with customized surface profiles and index modulated media.
- Fast and easy optical modeling by the innovative Light Path Diagram.

LightTrans

Starter Toolbox

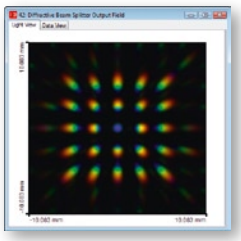
Selected Features



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. The toolbox allows for example the evaluation of the fiber coupling efficiency, beam parameters, PSF, MTF and power density in focal regions.



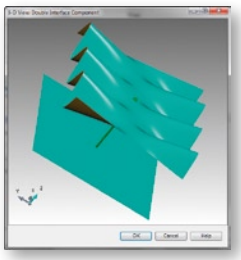
Far field of a diffractive beam splitter illuminated by polychromatic laser light.

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 ultra short 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 which is of importance especially for optical systems whose optical functions are based on diffraction and interference effects.

Customized surface profiles, light sources, transmissions and index modulated media

Programmable interface, light source, transmission and index modulated medium allow customizing optical components just by entering a formula. No external DLL or development environment is required. This enables for example the fast modeling of components with user defined freeform diffractive, refractive or hybrid surface profiles.

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

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