

WYROWSKI

VirtualLab FUSION

FAST PHYSICAL OPTICS SOFTWARE

LightTrans' talks at OPIE'18

Non-Sequential Optical Modeling with VirtualLab Fusion

Exhibitor's technical seminar

Wednesday 25 May 2018 • 15:00 – 15:45

Hartwig Crailsheim

VirtualLab Fusion - the known fast physical optics software - provides different approaches for non-sequential simulations through the entirety or part of an optical system. In non-sequential simulations with both ray and field tracing the user can control which light-propagation paths are to be considered. It is possible to switch between sequential and different degrees of non-sequential light (ray and field) tracing. At the same time, systems can be modeled conveniently and in a much more compact form. The investigation of etalons or ghost images generated by back-reflections is easily performed, so that countermeasures can be considered where necessary.

Non-sequential simulations require the accurate consideration of energy conservation. After all, it is of paramount importance to know how much energy the different deflected light portions carry. Otherwise no meaningful result can be expected. VirtualLab's field tracing engine takes care of this by tracing the full electromagnetic field, considering polarization and coherence effects. VirtualLab provides different Maxwell solvers, ranging from the approximated to the fully rigorous, which can be applied at will for different parts of the system: this results in an unparalleled versatility to adjust simulation time and accuracy to the specific needs of the user.

Considering the full capacity of VirtualLab by using also its grating and waveguide analysis tools, highly complex waveguide setups containing diverse grating structures can be modeled, analyzed and optimized. The evaluation of efficiencies of even subwavelength gratings is done rigorously. This way the analysis of grating components as parts of larger systems is made possible, a feat that would be impracticable if performed with universal Maxwell solvers for the whole system at once.