WYROWSKI

VirtualLab FUSION

FAST PHYSICAL OPTICS SOFTWARE

LightTrans' talks at SPIE Optical Systems Design 2018

Physical-optics modelling for optical components made of birefringent materials

Computational Optics
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In modern optics, a huge variety of components with specific purposes made from different materials are employed. Birefringent materials, due to their polarization- and direction-dependent optical properties, are often used for manipulating light in difference aspects. That makes an important group of optical components, including polarizers, waveplates, prisms and so on. To model such components with proper inclusion of the birefringent effects, we adhere to physical optics, which is governed by Maxwell's equations. Especially, by analysis in the spatial frequency domain, the effect from birefringence can be clearly revealed and, based on that, we develop a fast numerical algorithm to model light propagation through such components. We will present simulation examples on complex polarization conversion in uniaxial crystals, focusing properties due to birefringence, field propagation through a Wollaston prism, and conical refraction in biaxial crystals.

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