

“IMAGE SIMULATION AND THE PATH FROM RAY OPTICS TO WAVE OPTICS AND REAL PHYSICAL DEVICES MODELING”

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Image Simulation allows to simulate the appearance produced by optical lens systems; aberrations, distortion, polarization and other effects can be accounted for to visually assess the quality of the optical system. It will be shown a practical usage case of a lens system and the corresponding Image Simulation study carried out by means of COMSOL Multiphysics and the set of automatic functionalities offered for such tasks. The theoretical device behavior will be naturally integrated with structural-thermal-optical performance (STOP) analyses to get thermal drift performance of the physical system under real thermal and mechanical usage conditions. In the final part of the presentation it will be shown how the same multiphysics concept permits COMSOL Multiphysics to extend into wave optics, light-matter interaction, plasmonic resonances, semiconductor devices modeling, and much more.