

LightTrans poster at OPIC 2019

Fast-physical optics modeling of two-photon microscopy with 3D-structured illumination

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Abstract

We perform a fast-physical optics modeling of two-photon microscopy with 3D-structured illumination in the context of field tracing. The Local Plane Interface Approximation (LPIA) algorithm, a free space propagation algorithm and the Fourier Modal Method (FMM) are all combined. We analyze the contrast, inhomogeneity and the temporal focusing of the 3D-structured illumination pattern in the focal region, which should be accounted for in image processing. We find that various effects influence the contrast, inhomogeneity and the temporal focusing of the pattern, such as the aberration of the real lens system, the pulsed laser and the Gaussian illumination profile. We also investigate the tolerance of the alignment of the microscopy system.

LIGHT
SHAPING



OPTICAL
METROLOGY



IMAGING
SYSTEMS



LASER
SYSTEMS



VIRTUAL AND
MIXED REALITY

