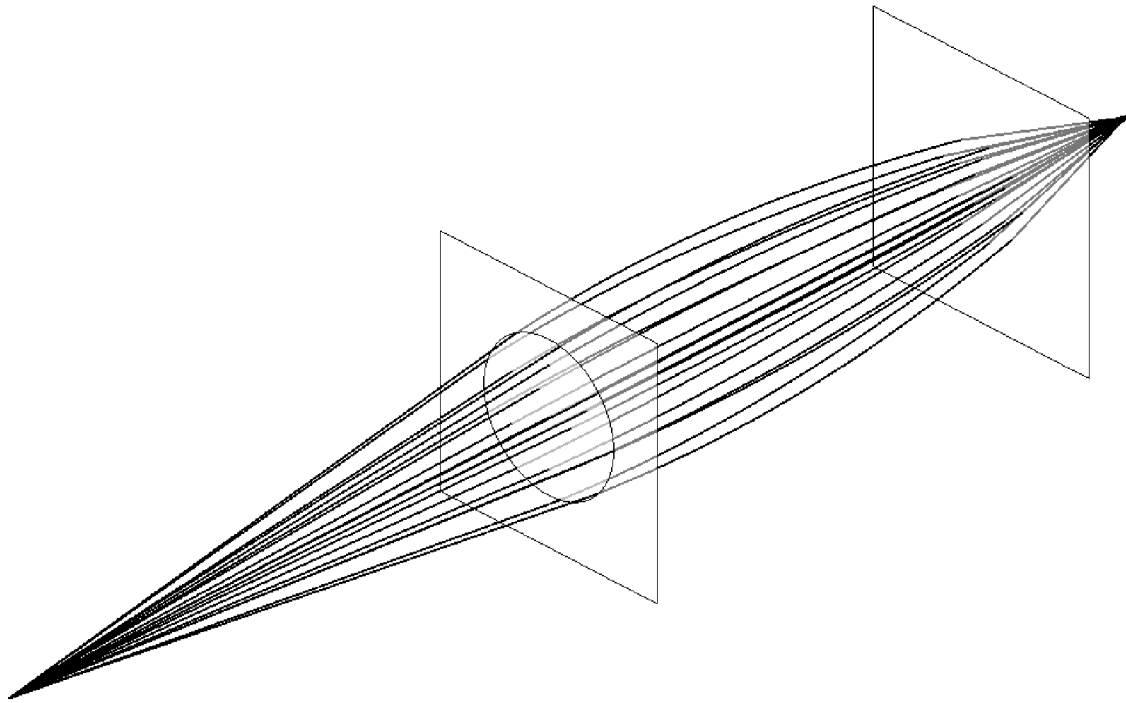


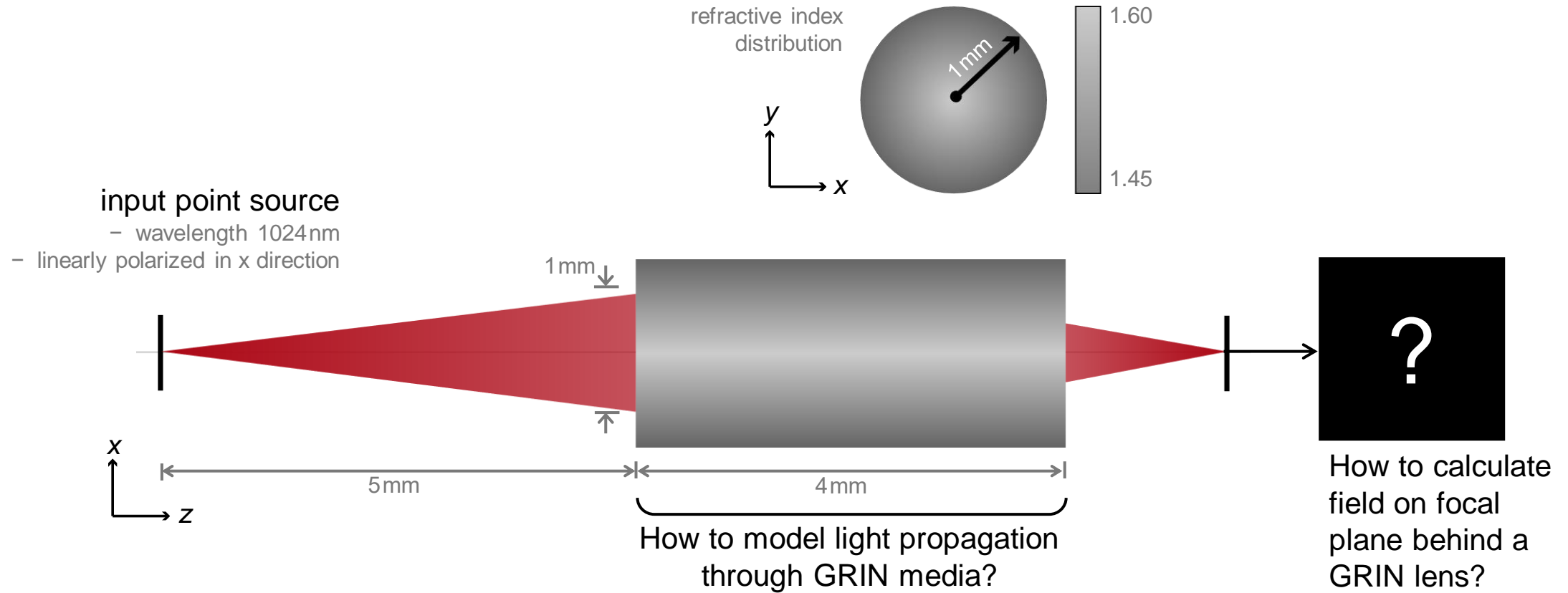
Modeling of Graded-Index (GRIN) Lens

Abstract

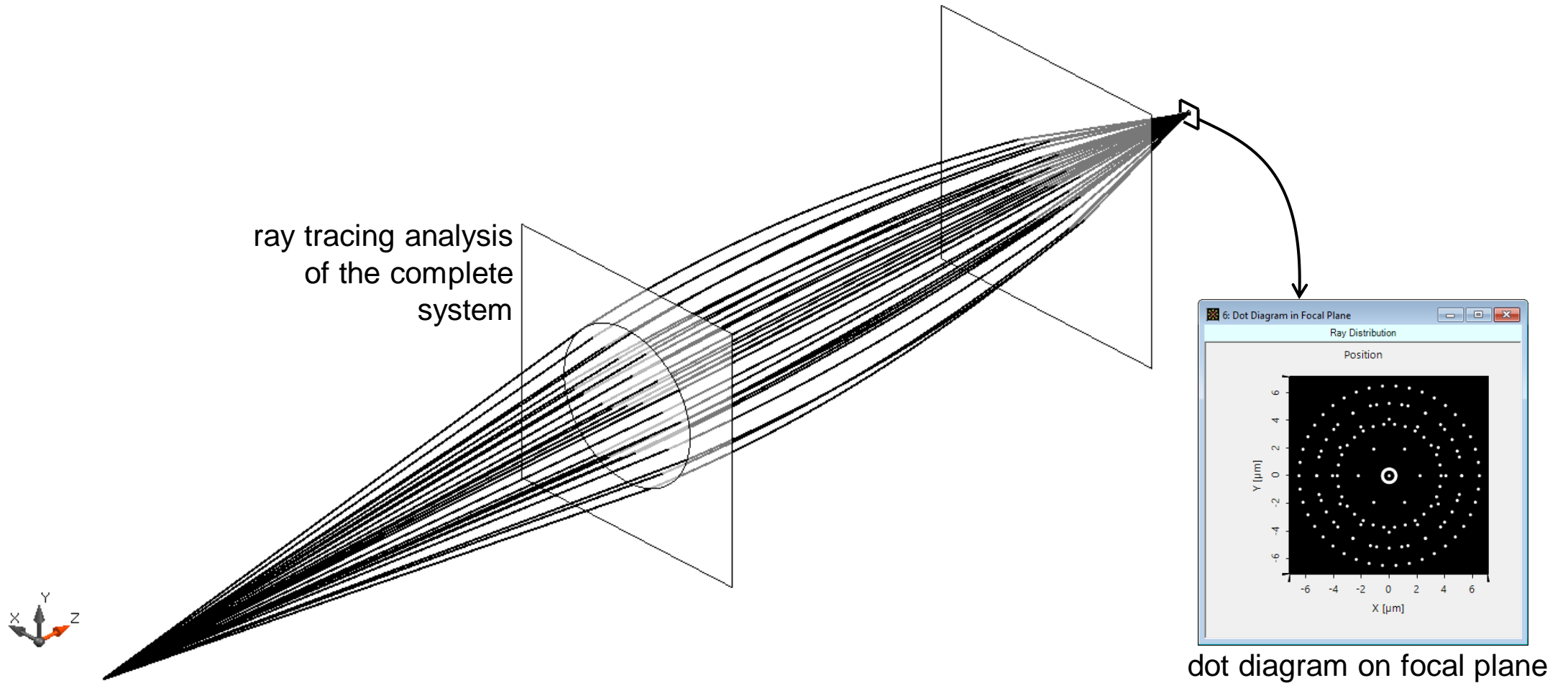


Graded-index (GRIN) media, with smooth variation of refractive indices, can be used to e.g. make a lens with flat surface, or reduce the aberrations. VirtualLab Fusion provides a physical-optics modeling technique for light propagation through GRIN media. With the same speed but far beyond ray tracing, the physical-optics modeling takes fully electromagnetic fields into consideration, which includes the polarization crosstalk effects.

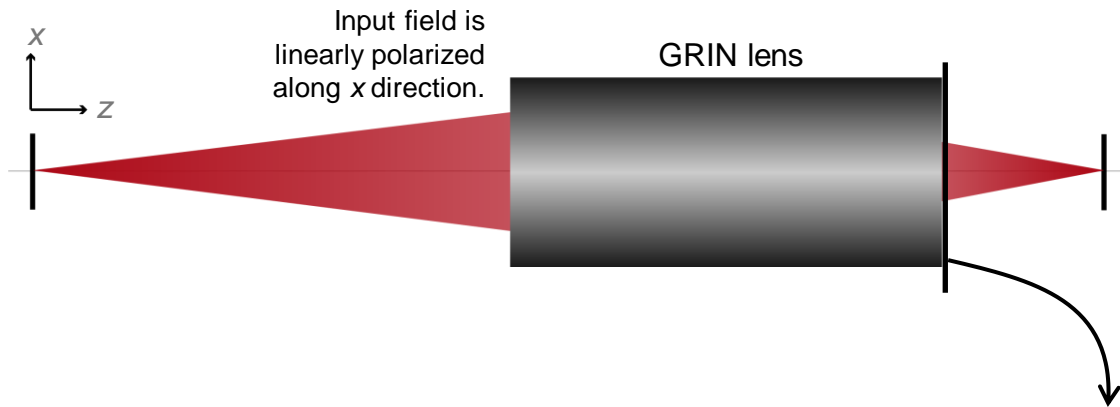
Modeling Task



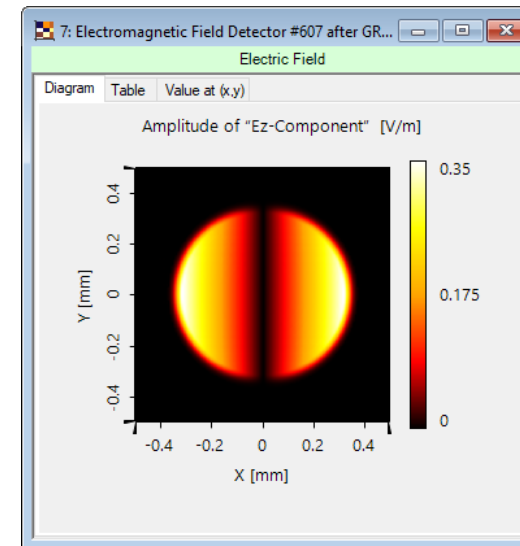
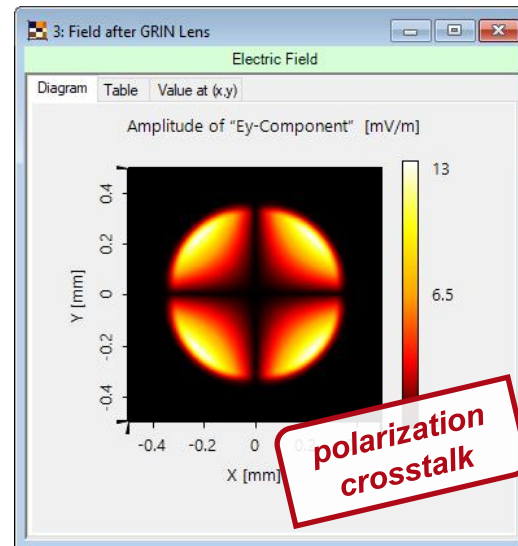
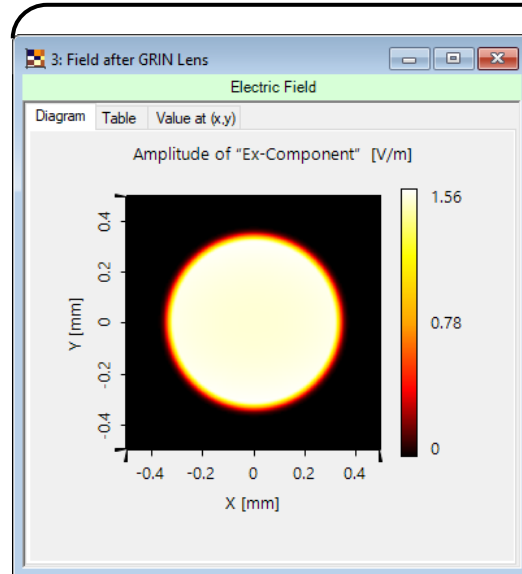
Ray Tracing Results



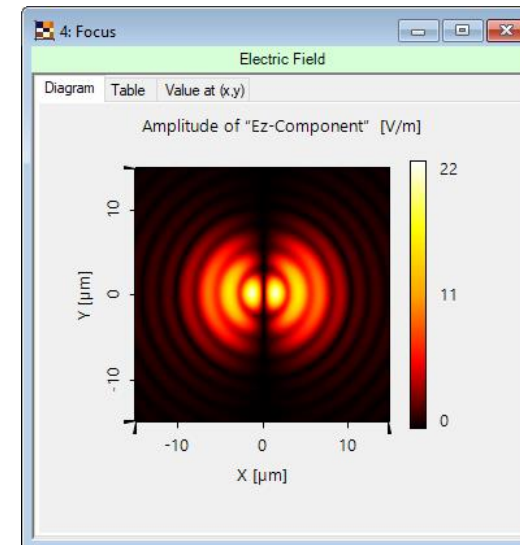
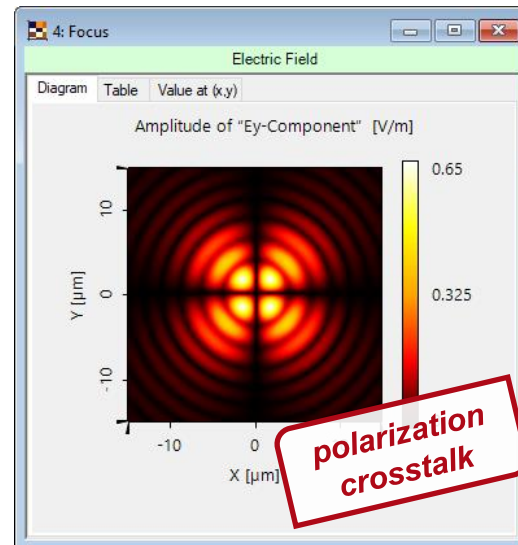
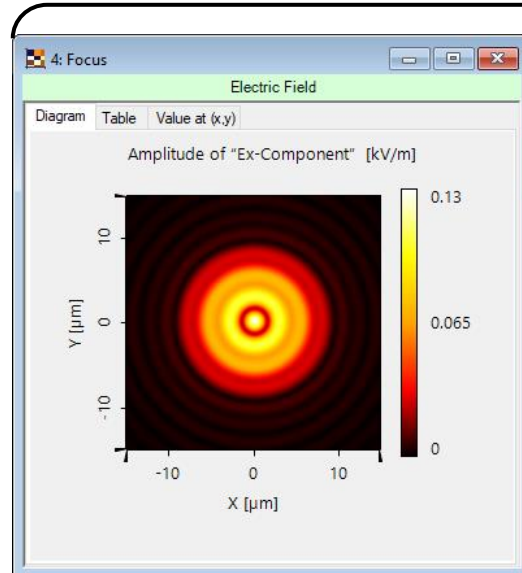
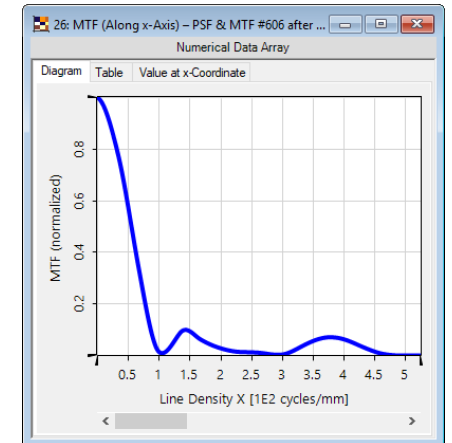
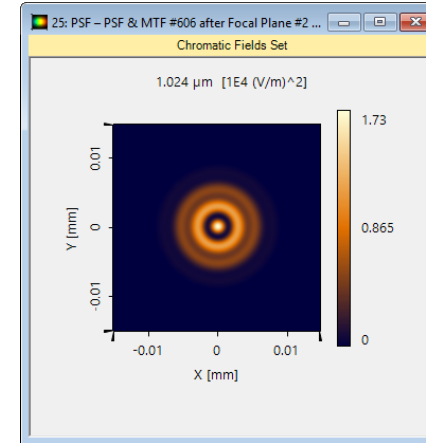
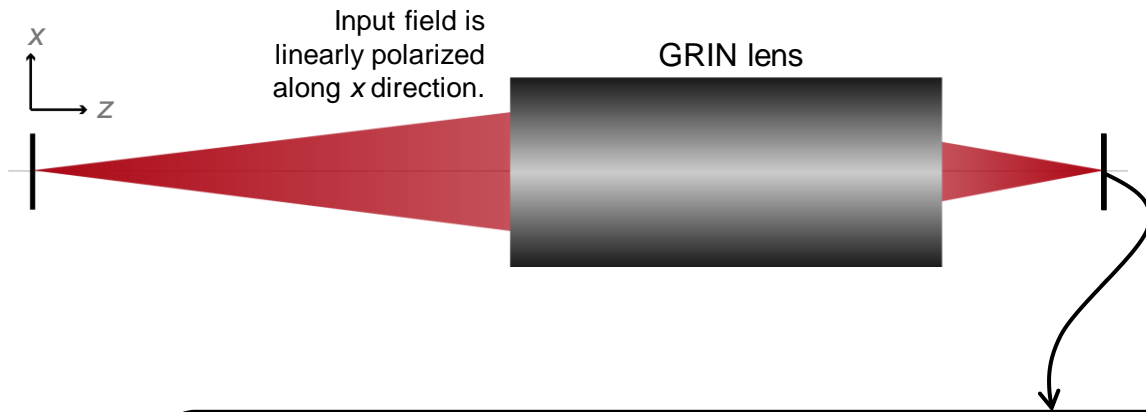
Field Tracing Results – behind GRIN Lens



fully vectorial modeling of field propagation through the GRIN lens

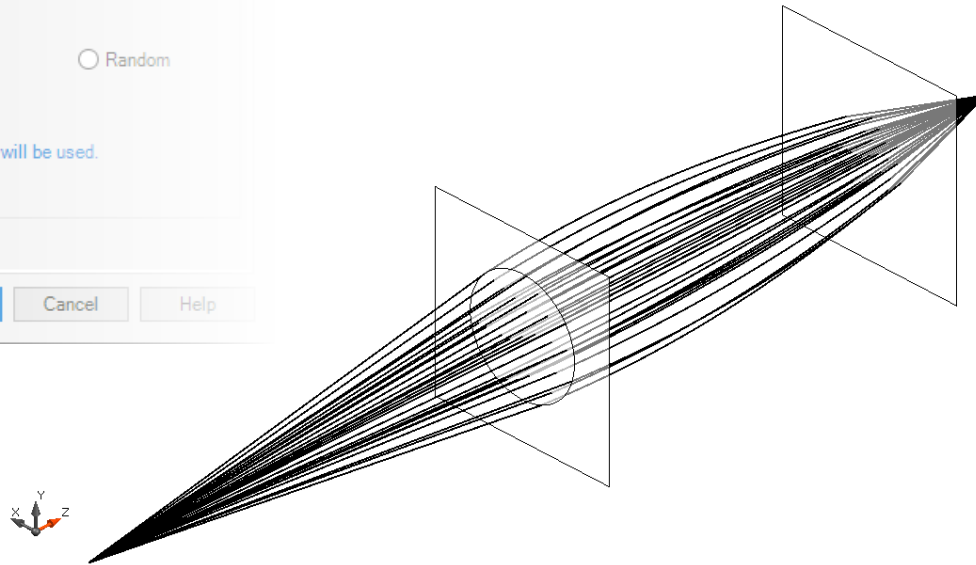
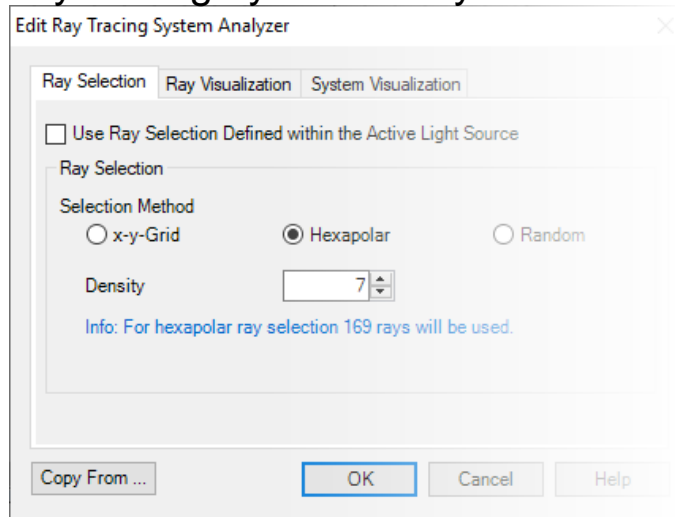


Field Tracing Results – Focal Plane

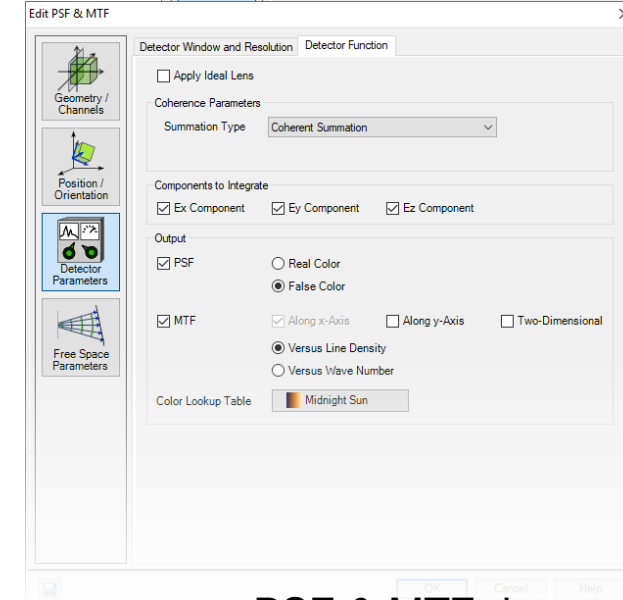
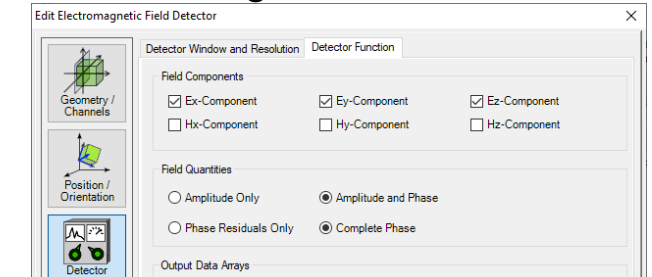


Peek into VirtualLab Fusion

ray tracing system analyzer



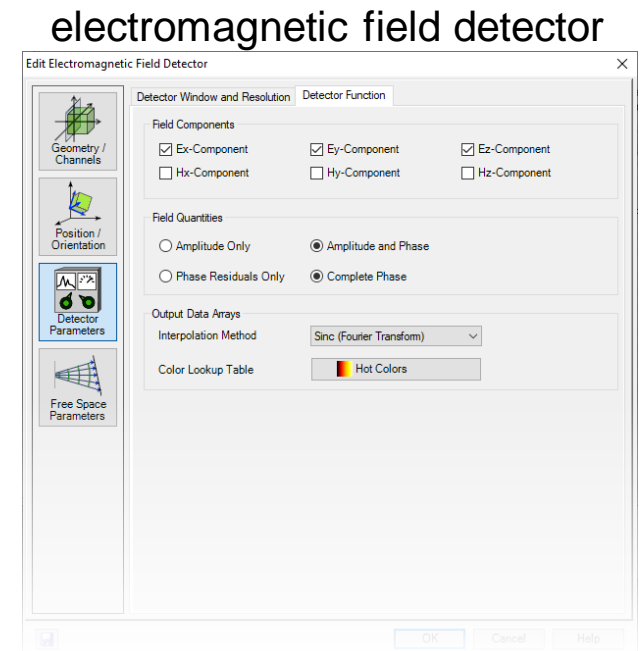
electromagnetic field detector



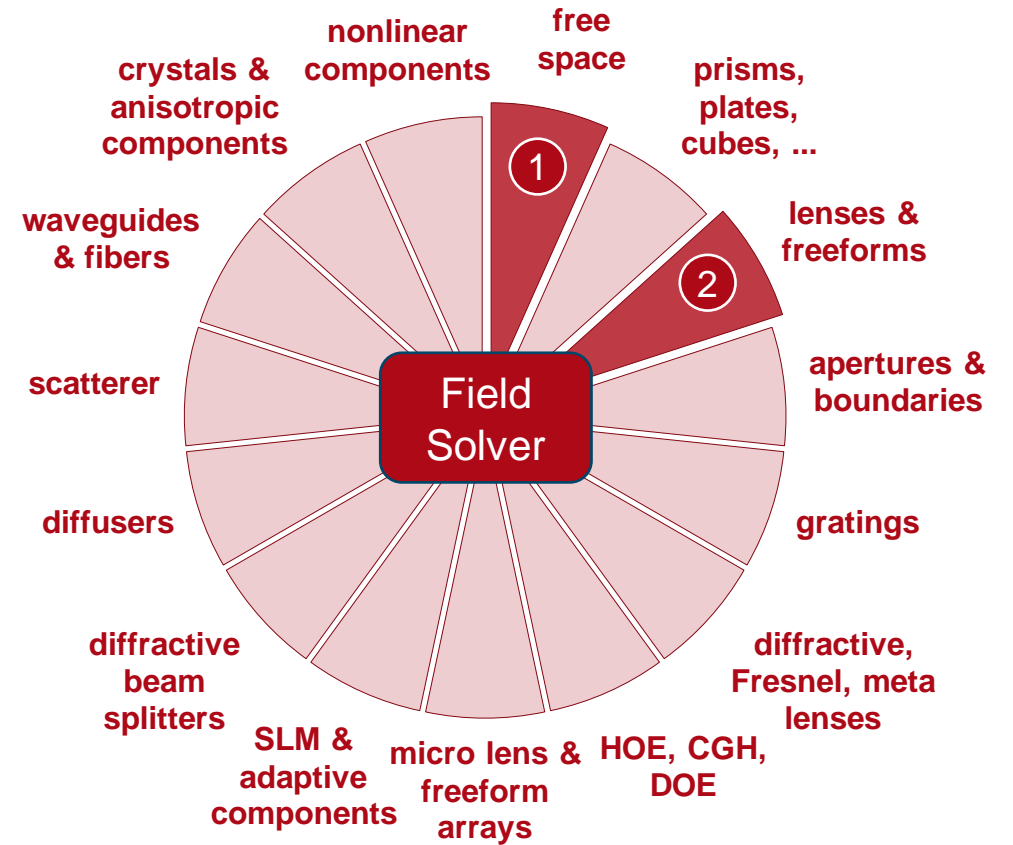
PSF & MTF detector

Workflow in VirtualLab Fusion

- Set up input point source
 - [Basic Source Models](#) [Tutorial Video]
- Construct a graded-index lens
 - [Construction and Modeling of a Graded-Index Lens](#) [Use Case]
- Configure a Detector
 - [Usage of PSF & MTF Detector](#) [Use Case]
 - [Electromagnetic Field Detector](#) [Use Case]



VirtualLab Fusion Technologies



Document Information

title	Modeling of Graded-Index (GRIN) Lens
document code	GRIN.0002
version	2.0
toolbox(es)	Starter Toolbox
VL version used for simulations	VirtualLab Fusion Summer Release 2019 (7.6.1.18)
category	Application Use Case
further reading	<ul style="list-style-type: none">- <u>Construction and Modeling of a Graded-Index Lens</u>- <u>Gaussian Beam Focused by a Thermal Lens</u>