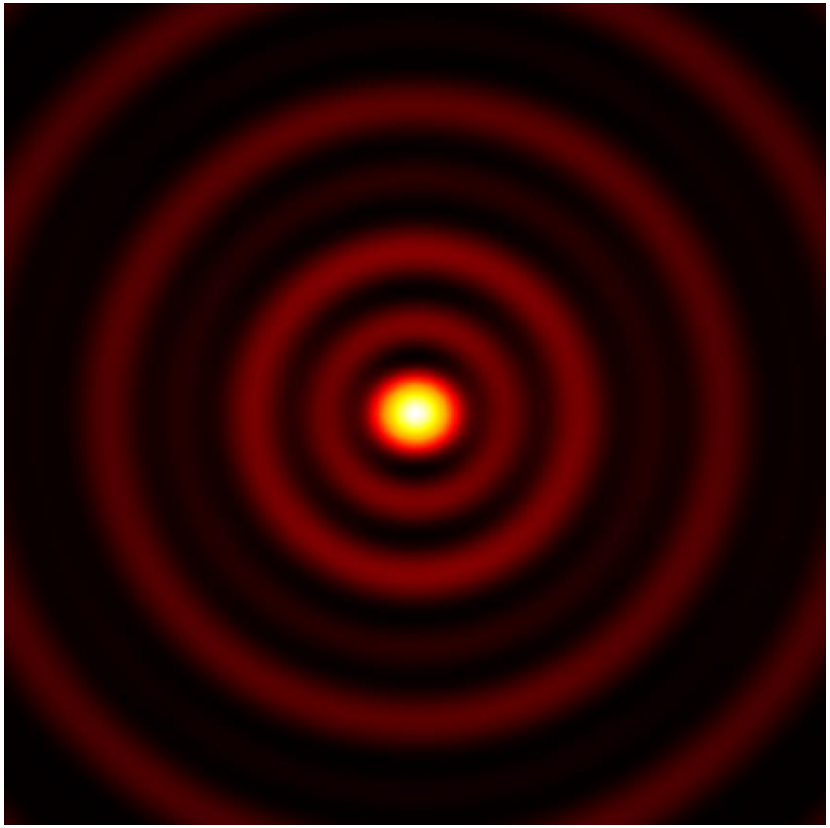
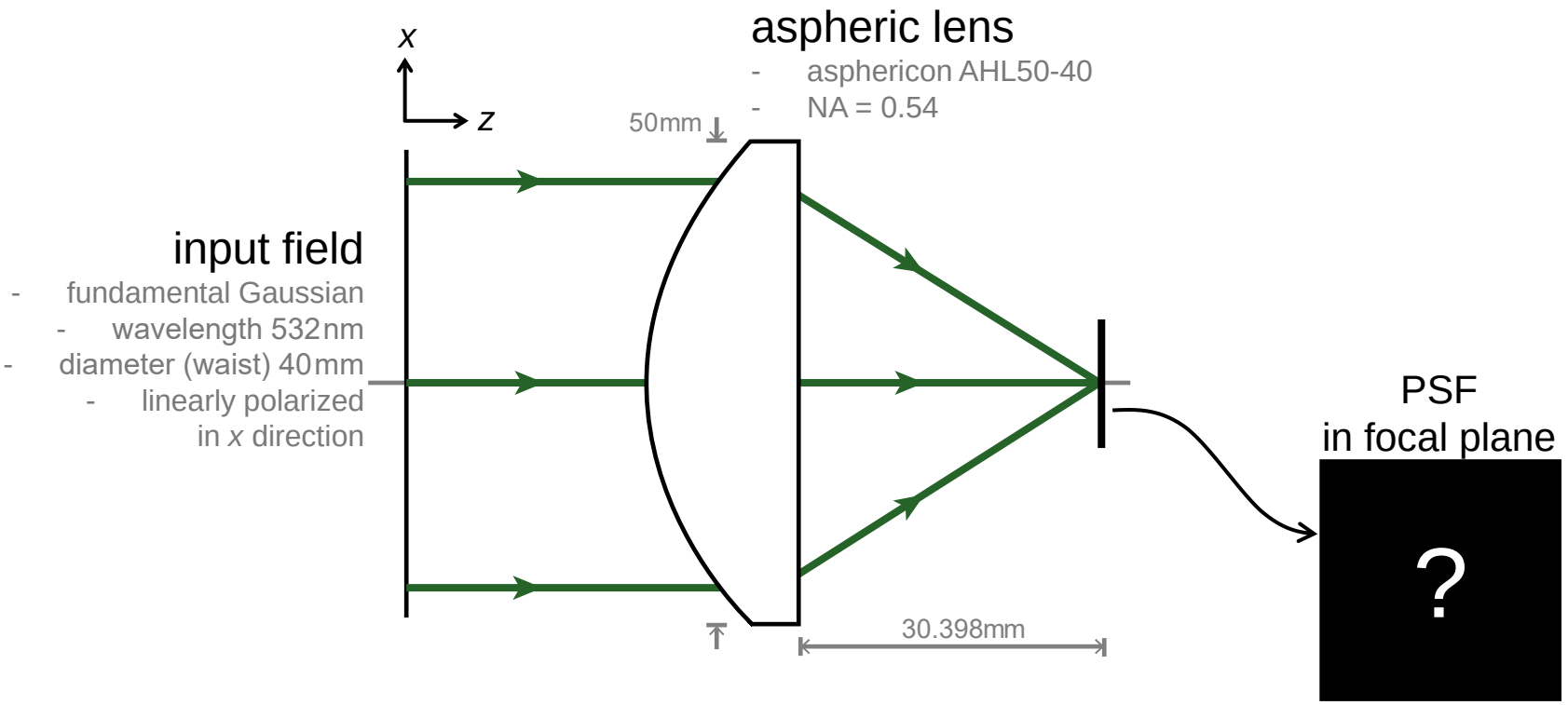
Advanced PSF Calculation in a High-NA Lens System

Abstract

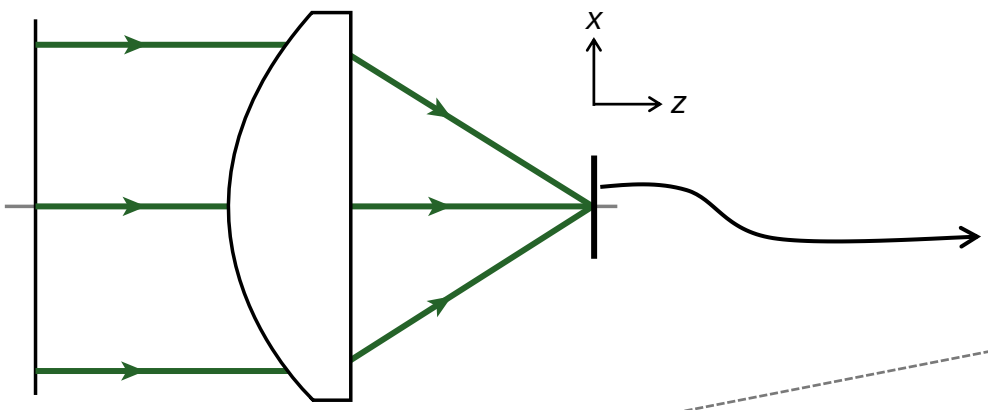


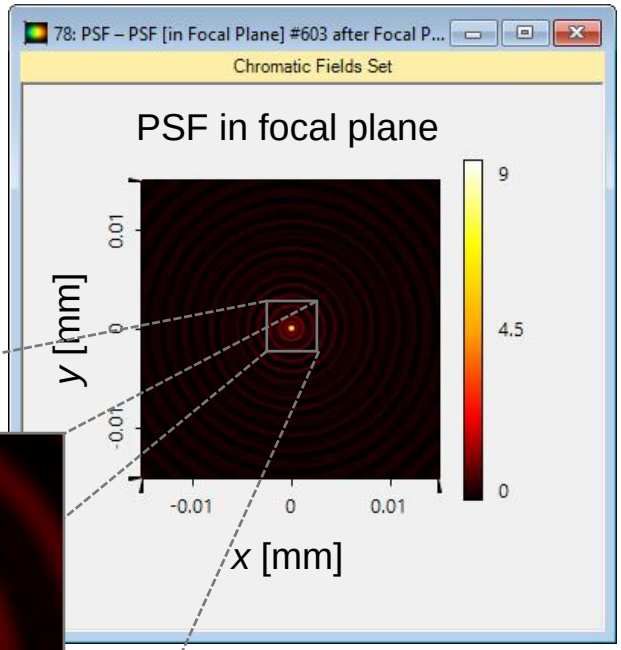
It is known that the vectorial nature of light plays a non-negligible role in high-NA focusing situations. In this example, focusing of a linearly polarized Gaussian beam by a high-NA aspheric lens is presented, and it is shown that the PSF in the focal plane shows asymmetry. By examining the electromagnetic field components in the focal plane, it can be found that the asymmetry is caused by a relatively strong E_z component.

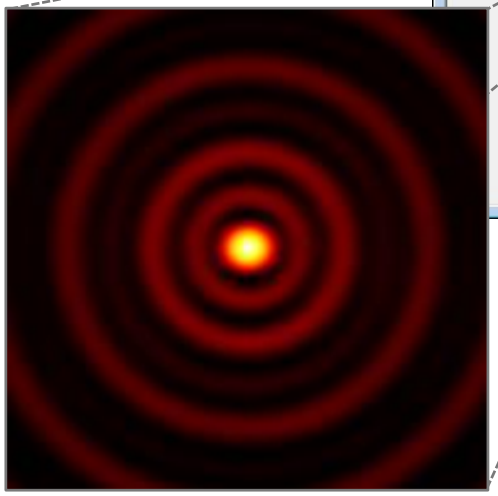
Modeling Task



Results



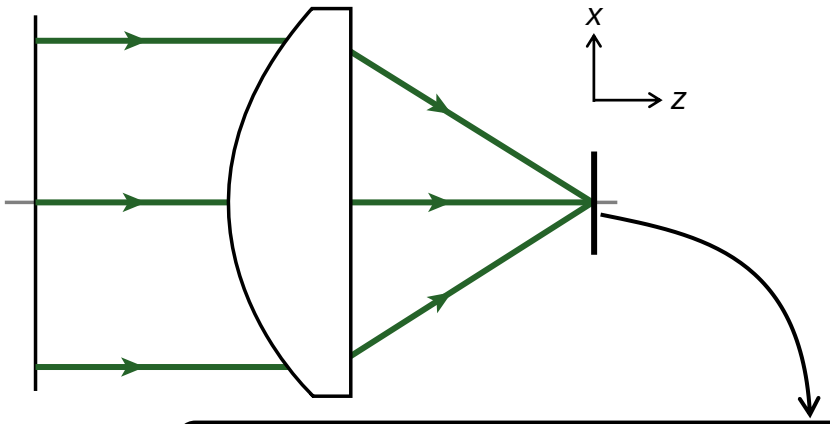


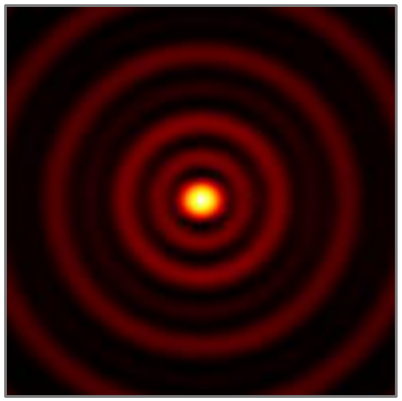


Asymmetry is seen in the PSF, because of vectorial effects.

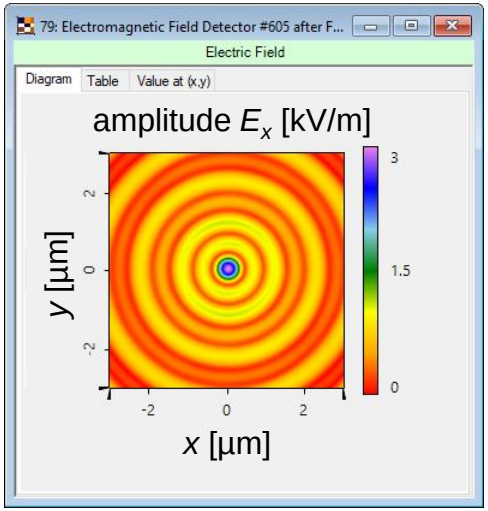
Calculation of PSF in the focal plane behind the high-NA lens takes 12 seconds

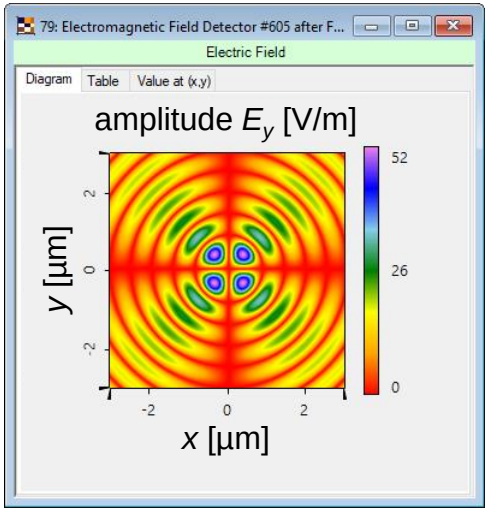
Results

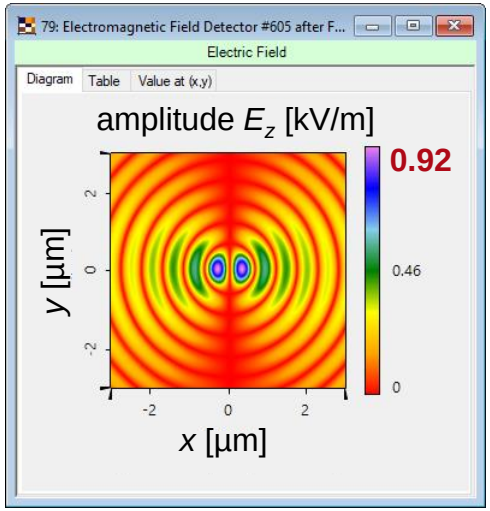




Asymmetry in PSF is due to the relatively strong E_z component.







Document Information

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