

Abstract Submitted  
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**Manipulating polarization distribution of tightly focused vector optical fields** GUIGENG LIU, CHENGHOU TU<sup>1</sup>, YUPEI WANG, DAN WANG, XI CHENG, JUAN LIANG, HUI-TIAN WANG, Nankai University, MOE KEY LABORATORY OF WEAK LIGHT NONLINEAR PHOTONICS AND SCHOOL OF PHYSICS TEAM — We present a method to manipulate the polarization distribution of the focal plane, which is realized by controlling the polarization and amplitude of incident optical fields. Vector optical fields with arbitrary amplitude and polarization distribution can be generated based on a spatial light modulator and a common path interferometer with the aid of a 4f system, and the polarization distribution in focal fields is numerically studied. When incident optical fields is centrosymmetric, the ellipticity of focal fields is the same as that of incident fields when the ellipticity keeps constant; however, if the ellipticity of incident optical fields is not constant, the ellipticity for focal fields is different from the input one. For the case that the intensity of incident fields is not centrosymmetric, the ellipticity of its focal fields is not same as input fields when its ellipticity keeps constant and orientation is inhomogeneous, and it is also the case for the condition that the ellipticity is not constant. These findings are the result of interferences of broken-symmetry input fields. The results can be helpful in trapping of anisotropic particles and exciting the anisotropic materials.

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