

Abstract Submitted  
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**Focusing properties of vector optical fields with both orientation and ellipticity arbitrarily modulated** GUIGENG LIU, XUEMEI WU, JUAN LIANG, XI CHENG, YUPEI WANG, CHENGHOU TU<sup>1</sup>, Nankai University, MOE KEY LABORATORY OF WEAK LIGHT NONLINEAR PHOTONICS AND SCHOOL OF PHYSICS TEAM — Arbitrary modulation of both the orientation and the ellipticity is realized through a spatial light modulator and a common path interferometer. Compared with linearly and hybrid vector optical fields, those fields process an extra degree of freedom to modulate. Through simulation, we analyze the focusing properties of those fields when both the orientation and the ellipticity are modulated. By modulating the ellipticity of radially polarized light, one can adjust the relative energy between the transverse and the longitudinal components arbitrarily, which can also be understood that the total fields are the combination of radially and azimuthally polarized light. And also, the polarization distribution of focusing fields resembles the polarization of the input fields. When ellipticity of input fields varies azimuthally, the energy distribution of focusing fields also depends on the input fields. We let the orientation of input fields keep azimuthal, but left-circularly polarized in the first and the third quadrant, right-circularly polarized in the second and the fourth quadrant, thus we get square patterned focusing fields. Those novel focusing fields can be helpful in optical trapping and optical micromachining.

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