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Vector vortex beams through amplifiers

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Vector beams are spatial modes of light in which the polarization and spatial degree of freedom are inseparable. Such beams have widely been used in applications ranging from optical tapping and tweezers to optical communications. Yet, these vector beams have been only generated in low power due to limitation in the tools used to generate them. Here, we show the amplification of vector beams through birefringent amplifier. Since the beam purity is important key that determines the efficiency of the beam in specific applications. We measured the perturbation of the vector beam purity throughout the amplification process. Our result shows that the purity of the vector beams can be modified while increasing the power which is a significant step toward the high brightness lasers.

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