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## **Compensation for the orbital angular momentum of a vortex beam in turbulent atmosphere by adaptive optics**

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A method which can be used to compensate for a distorted orbital angular momentum and wave front of a beam in atmospheric turbulence, simultaneously, has been proposed. To confirm the validity of the method, an experimental setup for up-link propagation of a vortex beam in a turbulent atmosphere has been simulated. Simulation results show that both distorted orbital angular momentum and the distorted wavefront of a beam due to turbulence can be compensated by an adaptive optics system with the help of a cooperative beacon at satellite. However, when the number of the lenslet of wavefront sensor and the actuators of the deform mirror is small, satisfied results cannot be obtained.

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