

Abstract Submitted
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Vorticity Measurement using LG Laser Beams with Orbital Angular Momentum¹ MANOOICHEHR KOOOCHESFAHANI, SHAHRAM POUYA, ALIREZA SAFARIPOUR, ANTON RYABTSEV, MARCOS DANTUS, Michigan State University — We present direct measurement of vorticity in a fluid flow based on angular velocity measurement of microparticles contained in the fluid. The method uses Laguerre-Gaussian (LG) laser beams that possess orbital angular momentum (OAM), a spatial (azimuthal) modulation of the beam phase front, and takes advantage of the rotational Doppler shift from microparticles intersecting the beam focus. Results are shown for the flow field of solid body rotation, where the flow vorticity is known precisely.

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