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Volumetric Real-time Wide Field Microscopy with Tunable Acoustic Lens: A New Tool for MicroPIV TING HSUAN CHEN, CRAIG ARNOLD, Princeton Univ — Obtaining volumetric images with high frame rate is a fundamental challenge for 3D micro Particle Image Velocimetry (PIV) used in characterizing the dynamics of fluid systems. In this presentation, we propose a new method based on a tunable acoustic lens integrated in a simple optical system. By synchronizing a pulsed LED with a high-speed camera, we are able to resolve a volume of 2 mmm by 2mm with depth 1mm in 7 us. The ability to resolve a volume of fluid in microseconds opens the door to exploring the fundamental dynamics in small-scale fluid systems.

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