

Abstract Submitted  
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**Volumetric Velocimetry in Wall Bounded Flows** TRISTAN CAMBONIE, JEAN-LUC AIDER, Laboratoire PMMH - UMR7636 CNRS - ESPCI - University Paris 6 - University Paris 7, “INSTABILITY, CONTROL AND TURBULENCE” (ICT) TEAM — The role of three-dimensional (3D) perturbations in the transition process of boundary layers is well-known. One of the major limitations in the understanding of the complex mechanisms involved in the transitions relies on the experimental difficulty in investigating strongly 3D unstationary flows. In this study, we apply for the first time Volumetric Velocimetry to a boundary layer flow. Volumetric Velocimetry gives access to the instantaneous three-components (3C) 3D velocity field (3D3C). It has already been applied to various detached vortical structures like vortex rings, but it is still a challenge in wall bounded flows because of the need of a good spatial resolution to resolve small-scale structures and because of the optical perturbations induced by the wall. We propose a dedicated experimental methodology adapted to these constraints and apply it successfully to complex 3D flows induced by different three-dimensional perturbations introduced into a flat-plate boundary layer.

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