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Particle Image Velocimetry of Vortex Loops in a Laminar Boundary Layer WILLIAM HAMBLETON, Midwest Mechanics, IVAN MARUSIC, University of Melbourne — Time resolved particle image velocimetry (PIV) is used to investigate the development of vortex loops in a laminar boundary layer. Vortex loops are generated in a laminar boundary layer by the impulsive injection of fluid from streamwise aligned slots in the wall. The vortex loops arising from a single slot as well as two slots separated by a small spanwise distance is investigated. A time resolved, phase averaged volume is built up from individual stereoscopic PIV measurement planes. The development of the vortex loops, visualized by the enstrophy of the ensemble averaged velocity fields, reveals a complex interaction of vortex cores between adjacent vortex loops.

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