

Abstract Submitted  
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**Coherent Structure Identification Techniques applied to Stereoscopic PIV Measurements in an Urban-type Boundary Layer**<sup>1</sup> CANDACE WARK, BRUNO MONNIER, Illinois Institute of Technology, BRIAN NEISWANDER, University of Notre Dame — An experimental investigation of the flow through an urban-type boundary layer (4 rows of 3 cuboid Plexiglas blocks) in an experimentally modeled atmospheric boundary layer will be presented. This work focuses on the effect of the incidence angle of the approaching boundary layer as well as the streamwise spacing between adjacent rows covering two different flow regimes, the wake interference and skimming flow regimes. This study utilizes Stereo PIV measurements: a 2D traverse system carrying the entire SPIV system allows us to precisely position the measurement plane at hundreds of positions within the domain. The spacing between adjacent planes is chosen in order to resolve details close to the edges of the blocks. Various existing coherent structure identification tools are used and compared: isosurfaces of vorticity,  $\lambda_2$ , swirling strength, second invariant of the velocity gradient tensor ( $Q$ ) and normalized angular momentum.

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