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POD Analysis of Flow Behind a Four-wing Vortex Generator MAHDI HOSSEINALI, STEPHEN WILKINS, JOSEPH HALL, University of New Brunswick — Wing-tip vortices that persist long after the passage of large aircraft are of major concern to aircraft controllers and are responsible for considerable delays between aircraft take-off times. Understanding these vortices is extremely important, with the ultimate goal to reduce or eliminate delays altogether. Simple theoretical models of vortices can be studied experimentally using a four-wing vortex generator. The cross-stream planes are measured with a two-component Particle Image Velocimetry (PIV) system, and the resulting vector fields were analyzed with a Proper Orthogonal Decomposition (POD) via the method of snapshots. POD analysis will be employed both before and after removing vortex core meandering to investigate the meandering effect on POD modes for a better understanding of it.

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