

Abstract Submitted
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Experimental Study of the Temporal Nature of an Actively Controlled Three Dimensional Turret Wake PATRICK SHEA, MARK GLAUSER, Syracuse University — Experimental measurements have been performed to characterize the actively controlled wake of a three-dimensional, non-conformal turret which is a bluff body commonly used for housing optical systems on airborne platforms. As a bluff body, turrets can generate strong turbulent flow fields that degrade the performance of the optical systems and the aircraft. Experiments were performed in a low-speed wind tunnel at Syracuse University using particle image velocimetry and dynamic pressure measurements with the objective of developing a better understanding of the spatial and temporal nature of the wake flow field. Active control was achieved using dynamic suction in the vicinity of the turret aperture and was found to have a significant impact on the structure of the wake as well as the temporal characteristics of the flow field. With a better understanding of the wake characteristics, closed-loop, active flow control systems will be developed to help reduce fluctuating loading and aero-optical distortions associated with the turbulent flow field.

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