

Abstract Submitted  
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**Active Flow Control Techniques for use on Three Dimensional Hemispherical Turrets** PATRICK SHEA, RYAN WALLACE, MARK GLAUSER, Syracuse University — Hemispherical turrets have been a topic of considerable interest over the past several decades with studies focusing on airborne optical device applications. Highly three dimensional, turbulent flows develop in the wake of a turret, especially when a flat, optical aperture is in place on the hemisphere. Both open and closed-loop flow control have been successfully applied to this geometry to control the turbulent flow over the aperture, but control of large scale structures in the wake using open-loop flow control have been less effective. Fluctuating loads on the turret, which can induce undesired structural loading, have been attributed to strong, turbulent fluctuations in the velocity of the turret wake. The current work involves developing a more robust active control system (both open and closed-loop using suction based actuators) that will not only allow for the control of the flow over the aperture as Syracuse University is currently studying, but will also allow for control of the large scale flow structures that develop in the wake of a turret.

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