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Flow Characteristics of Ground Vehicle Wake and Its Response to Flow Control[1] PRABU SELLAPPAN, JONATHAN MCNALLY, FARRUKH ALVI, Florida Center for Advanced Aero-Propulsion (FCAAP), Florida State University — Air pollution, fuel shortages, and cost savings are some of the many incentives for improving the aerodynamics of vehicles. Reducing wake-induced aerodynamic drag, which is dependent on flow topology, on modern passenger vehicles is important for improving fuel consumption rates which directly affect the environment. In this research, an active flow control technique is applied on a generic ground vehicle, a 25Ahmed model, to investigate its effect on the flow topology in the near-wake. The flow field of this canonical bluff body is extremely rich, with complex and unsteady flow features such as trailing wake vortices and c-pillar vortices. The spatio-temporal response of these flow features to the application of steady microjet actuators is investigated. The responses are characterized independently through time-resolved and volumetric velocity field measurements. The accuracy and cost of volumetric measurements in this complex flow field through Stereoscopic- and Tomographic- Particle Image Velocimetry (PIV) will also be commented upon.

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