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Controlled Wake of a Moving Axisymmetric Bluff Body E. LEE, B. VUKASINOVIC, A. GLEZER, Georgia Institute of Technology — The aerodynamic loads exerted on a wire-mounted axisymmetric bluff body in prescribed rigid motion are controlled by fluidic manipulation of its near wake. The body is supported by a six-degree of freedom eight-wire traverse and its motion is controlled using a dedicated servo actuator and inline load cell for each wire. The instantaneous aerodynamic forces and moments on the moving body are manipulated by controlled interactions of an azimuthal array of integrated synthetic jet actuators with the cross flow to induce localized flow attachment over the body's aft end and thereby alter the symmetry of the wake. The coupled interactions between the wake structure and the effected aerodynamic loads during prescribed time-periodic and transitory (gust like) motions are investigated with emphasis on enhancing or diminishing the loads for maneuver control, and decoupling the body's motion from its far wake.

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