

Abstract Submitted
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Compressible Large Eddy Simulation of Flow Control over a Wall-Mounted Hump JENNIFER FRANCK, TIM COLONIUS, California Institute of Technology — A compressible large eddy simulation (LES) is used to simulate flow over a wall-mounted hump geometry. The flow is characterized by a turbulent, unsteady flow separation, recirculation bubble, and reattachment. The LES results are compared with experimental data over a range of subsonic compressible Mach numbers from 0.25 to 0.6. Control is applied just before the separation location by modeling both steady suction and zero net-mass flux actuation at the wall boundary. Adding control shortens the average separation bubble length, but steady suction is shown to be more effective at reducing drag than the oscillatory forcing. For a given momentum coefficient, the control is shown to be less effective at compressible mach numbers than incompressible flow.

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