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Shock-boundary layer interaction and transonic flutter PRADEEPA TUMKUR KARNICK, KARTIK VENKATRAMAN, Dept. of Aerospace Engineering, IISc, Bangalore — The transonic flutter dip of an aeroelastic system is primarily caused by compressibility of the flowing fluid. Viscous effects are not dominant in the pre-transonic dip region. In fact, an Euler solver can predict this flutter boundary with considerable accuracy. However with an increase in Mach number the shock moves towards the trailing edge causing shock induced separation. This shock-boundary layer interaction changes the flutter boundary in the transonic and post-transonic dip region significantly. We discuss the effect of viscosity in changing the flutter boundary in the post-transonic dip region using a RANS solver coupled to a two-degree of freedom model of the structural dynamics of a wing.

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