

Abstract Submitted
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Influence of wall heating on a shock-wave / turbulent boundary layer interaction¹ LIONEL LARCHEVEQUE, JEAN-PAUL DUSSAUGE, IUSTI, Provence University and CNRS, Marseille, France — Shock / boundary layer interactions, if strong enough, are known to result in separation of the incoming boundary layer and to exhibit strong unsteadinesses. The main purpose of this work is to study the influence of wall heating on these features by means of Large-Eddy Simulations. Six LES have been carried out for two shock angles, either with adiabatic or heated lower walls. The unsteady data thus obtained will be used to evaluate the effects of wall temperature fluxes on the interaction size, the separation state and the unsteady behavior of the separated flow at low and medium frequencies. The influence of the wall heating on the three-dimensional modulations found within the separation bubble, either intrinsic or induced by side walls, will also be analyzed. Computations taking into account side boundary layers will particularly be used to demonstrate that lower wall heating is an effective way to achieve experiments exhibiting large separation bubbles with restricted influences of the wind tunnel side walls.

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