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Unsteady Aspects of an Oblique Shock Reflection over a Heated Wall[1] VINCENT JAUNET, PIERRE DUPONT, JEAN-PAUL DUSSAUGE, IUSTI - UMR CNRS 6595 and Aix-Marseille University — In supersonic flows, when an oblique shock wave impinges a boundary layer and makes it separate, strong aerodynamical loads at low frequency are created. This study aims at studying density effects on these structures by means of wall heating. Experiments are conducted at Mach 2.3. The temperature of the floor of the test section can be heated up to twice the recovery value. The interaction length is investigated through mean schlieren visualizations. It turns out that the interaction length increases of about 30% between the adiabatic case and the heated one, whatever the adverse pressure gradient involved. Hotwire measurements are performed in the external flow in order to characterize the unsteadiness of the reflected shock. Results show that lower frequencies are involved in the heated case, in accordance with the Strouhal number of the interaction based on the interaction length L and the external velocity U_e: $S_t = \frac{f*L}{U_e} \simeq 0.03$.

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Jean-Paul Dussauge
IUSTI - UMR CNRS 6595 and Aix-Marseille University

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