

Supplementary Materials for

Dilatational-Wave-Induced Aerodynamic Cooling in Transitional Hypersonic Boundary Layers

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This PDF file includes:

Figs. S1

Captions for Movies S1 to S2

Other Supplementary Materials for this manuscript include the following:

Movies S1 to S2

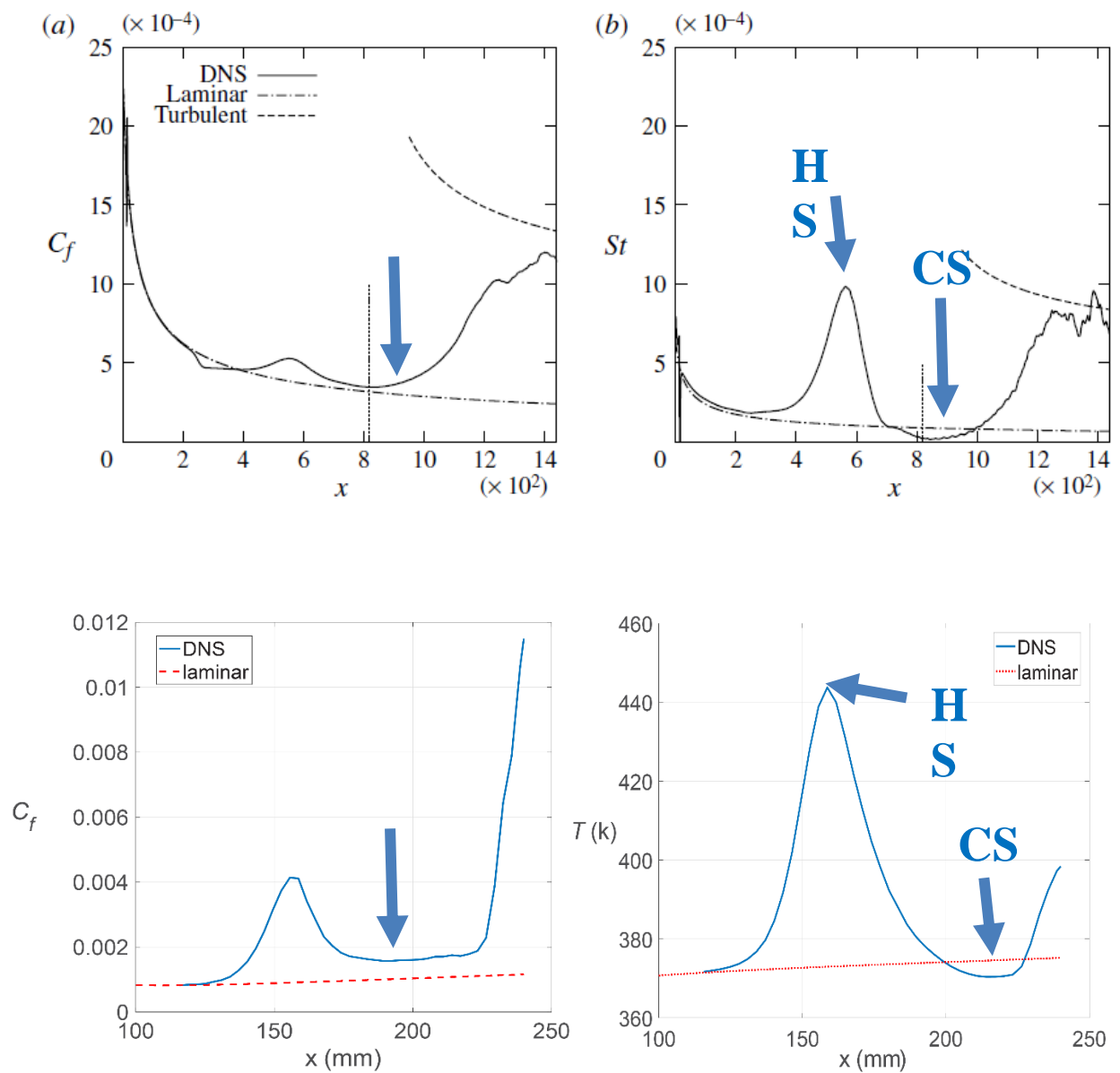


Fig. S1 (a) Skin friction coefficient and (b) Stanton number averaged in span and time for a Ma 6 flat plate boundary layer, reproduced from Figure 7 of Reference 8. (c) Skin friction coefficient and (d) surface temperature for a Ma 6 flared cone boundary layer calculated by our DNS. See the cooled regions (denote as CS) both in (b) and (d) where the skin frictions are higher than each laminar state.

Movie S1.

Time variation in Temperature and Temperature growth ratio after the hypersonic wind tunnel starts, arising from IR camera measurement.

Movie S1.

(Top two) Evolution of pressure and dilatation waves in hypersonic wall-bounded flows.

(Bottom) Time variation in $\langle w_{p\theta} \rangle$ and its time-averaged value respectively for heating region and cooling region.