

Erratum: Investigation into evolution mechanisms of Lamb vectors in compressible flow [Phys. Rev. Fluids 10, 044701 (2025)]

Fanrong Xue , Shufan Zou, Ming Zhao , and Wei Liu



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We correct an error in Sec. IV A of this paper. The error originates from the numerical evaluation of the Taylor-series expansions of the near-wall Lamb vector [Eqs. (15) and (20)] in a supersonic flat-plate flow. Specifically, the calculations inadvertently employed spatial flow quantities rather than strictly on-wall quantities, leading to inaccuracies in the predicted variations of the Lamb vector across the entire boundary layer, as shown in Figs. 5 and 6 of the original paper. After rigorously recalculating these expansions using on-wall quantities, we find that the resulting expressions are strictly valid only within the viscous sublayer, i.e., $y/\delta \in [0, 0.1]$. Accordingly, the results presented in Figs. 5 and 6 of the original paper are reliable exclusively within the viscous sublayer; the variations shown for $y/\delta > 0.1$ in these figures are invalid. Nevertheless, when the expansions are recomputed with on-wall quantities, the corrected Figs. 5 and 6 exhibit only minor quantitative changes within the viscous sublayer compared to the originally published figures. These slight differences do not alter any of the conclusions or analyses of the original paper.

In addition, we have added results at the slice of $x/c = 0.6$ in Fig. 6. To provide a clearer view of the behavior within the viscous sublayer, below we provide the corrected versions of Figs. 5 and 6, with the horizontal axis limited to $y/\delta \in [0, 0.1]$.

We sincerely thank Prof. Jiezhi Wu for identifying the error in the research.

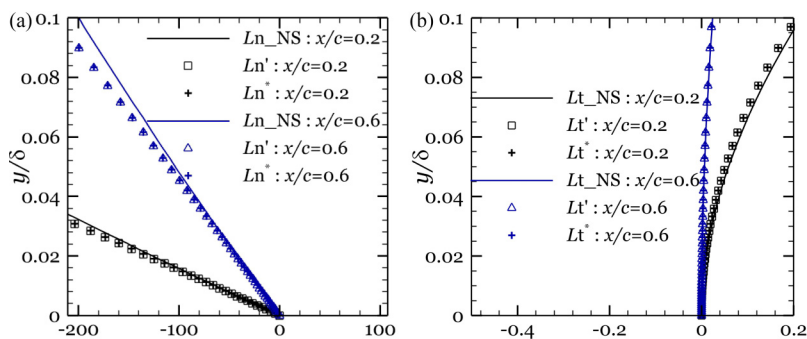


FIG. 5. Comparisons of the reconstructed near-wall Lamb vector with data from NS simulations and computations based on two different versions of the equations: (a) Wall-normal component L_n and (b) streamwise component L_t , at the normal axial positions $x/L = 0.2$ and $x/L = 0.6$.

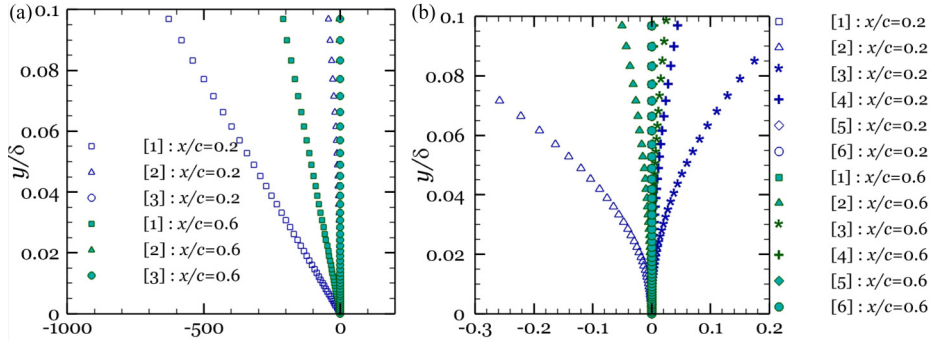


FIG. 6. Contributions from different orders in the Taylor-series expansion of (a) L_n and (b) L_t valuated at a slice of $x/L = 0.2$ and $x/L = 0.6$ in a flat-plate flow with a Mach number of 2.0.