

Abstract Submitted  
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**The dynamical role of vortex tubes and sheets in wall-bounded flows** SERGIO PIROZZOLI, University of Rome “La Sapienza” — Vortex sheets and tubes are extracted from DNS of a canonical compressible boundary layer, and their dynamical contribution analyzed by means of a non-local analysis based on the solution of the Poisson equation for the vector potential. The results show non-negligible contribution of vortex sheets to the wall layer dynamics, especially in the inner layer. The statistical relationship between tubes and sheets is also analyzed by means of conditional average fields extracted from a DNS database. The results support strong association between the two types of coherent structures, and indicate that vortex tubes are mainly produced upon roll-up of vortex sheets (as in the hairpin vortex paradigm), or interact causing the ejection of near-wall vorticity, or generate sheets of streamwise vorticity through a rubbing effect caused by the no-slip condition.

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