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Extraction of very-large scale structures in turbulent boundary layer STÉPHANE ROUX, Université de Nantes, FRANCK KERHERVÉ, MICHEL STANISLAS, JEAN MARC FOUCAUT, Ecole Centrale de Lille, JOEL DELVILLE, CNRS PPRIME, LML ER2 TEAM, PPRIME ATAC TEAM — The examined flow is a zero-pressure gradient turbulent boundary layer. The data used are taken from the joined experimental campaign conducted during the european WALLTURB program in the large wind tunnel at Laboratoire de Mécanique de Lille (LML). The free-stream velocity is 10 m/s. At the investigated position, the boundary layer thickness is 30 cm and the Reynolds number based on the momentum thickness is 19100. A methodology for eduction of *super-structures* is presented. These structures are characterised by a large degree of persistance and are thought to participate actively to the turbulence regeneration in the near-wall region (Marusic et al. 2010. A time-resolved estimate of the three-dimensionnal structures is obtained by combining low-speed two-dimensional stereo-PIV at 4Hz and a two-dimensionnal rake of 143 single hot-wire probes at 30 kHz. The very large scale structures are clearly reconstructed which exhibit a streamwise extent an order of magnitude larger than the boundary layer thickness. Interest is particulary focused on the low-speed species of these structures. Associated coounter-rotating vortices are also evidenced in good agreement with the litterature.

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