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Large Scale Organization of a Near Wall Turbulent Boundary Layer[1] MICHEL STANISLAS, RAOUL FLORENT DEKOU TIOMAJOU, JEAN MARC FOUCAUT, Ecole Centrale de Lille — This study lies in the context of large scale coherent structures investigation in a near wall turbulent boundary layer. An experimental database at high Reynolds numbers (Reθ =9830 and Reθ =19660) was obtained in the LML wind tunnel with stereo-PIV at 4 Hz and hot wire anemometry at 30 kHz [1]. A Linear Stochastic Estimation procedure, is used to reconstruct a 3 component field resolved in space and time. Algorithms were developed to extract coherent structures from the reconstructed field. A sample of 3D view of the structures is depicted in Figure 1. Uniform momentum regions are characterized with their mean hydraulic diameter in the YZ plane, their life time and their contribution to Reynolds stresses. The vortical motions are characterized by their position, radius, circulation and vorticity in addition to their life time and their number computed at a fixed position from the wall. The spatial organization of the structures was investigated through a correlation of their respective indicative functions in the spanwise direction. The simplified large scale model that arise is compared to the ones available in the literature. Streamwise low (green) and high (yellow) uniform momentum regions with positive (red) and negative (blue) vortical motions. **REFERENCES**

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