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Zero Pressure Gradient Flat Plate Boundary Layer Experiments Using Synchronized PIV and a Hot Wire Anemometry Rake[1] M. TUTKUN, P.B.V. JOHANSSON, W.K. GEORGE, Chalmers University of Technology, Dept. of Applied Mechanics, 412 96 Goteborg Sweden, M. STANISLAS, J.M. FOUCAUT, J. KOSTAS, S. COUDERT, Laboratoire de Mecanique de Lille, UMR CNRS 8107, 59655 Villeneuve d'Ascq France, J. DELVILLE, Laboratoire d'Etudes Aerodynamiques, UMR CNRS 6609, 86036 Poitiers France — Zero pressure gradient flat plate boundary layer experiments have been performed in the 20 meter long test section of the Laboratoire de Mécanique de Lille, LML, wind tunnel. Measurements were carried out at Re_θ =10 000 and Re_θ =20 000 using synchronized PIV and a hot wire anemometry rake. The boundary layer thickness at the measurement location was about 30 cm. A hot wire rake of 143 probes was placed in the test section of the wind tunnel to provide the time history of the boundary layer. 2 stereo PIV systems in the wallnormal-spanwise (YZ) plane, and 1 stereo PIV system to record in the streamwise-wallnormal (XY) were used. One high repetition PIV system was used in streamwise-spanwise (XZ) plane. The sampling frequency of the XZ PIV system was 3000 VF/s at Re_θ =20 000 and 1500 VF/s at Re_θ =10 000.

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