Abstract Submitted
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Characterization of coherent motions in cross flow via DNS CAN LIU, Texas Tech University, GUILLERMO ARAYA, University of Puerto Rico - Mayaguez, STEFANO LEONARDI, University of Texas at Dallas, MURAT TUTKUN, Institute for Energy Technology, LUCIANO CASTILLO, Texas Tech University — Direct numerical simulations are performed at a friction Reynolds number of 394, based on the bulk velocity and half channel height. It is shown that small local blowing perturbations near the leading edge of the channel produced a secondary peak in turbulent production. This peak is attributed to the presence of a strong adverse pressure gradient that occurs in the outer part of the boundary layer. Furthermore, this secondary peak is produced by the energy enhancement of the presence of large-scale motions, which is a result of a shear layer located at about y^+ =60. It has been found that the pressure fluctuation is important in the energy distribution of small scale motions in the inner region and large scale motions.

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