Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

The effects of localized blowing on pressure-velocity correlation CAN LIU, GUILLERMO ARAYA, LUCIANO CASTILLO, Department of Mechanical Engineering, Texas Tech University, STEFANO LEONARDI, Department of Mechanical Engineering, University of Texas at Dallas — It is well known that wall pressure fluctuations are footprints of the large coherent motions existent in the outer region of the boundary layer. In this investigation, spatial-temporal correlations of the pressure and velocity fields are computed in a spatially-developing turbulent channel flow with five-blowing jets located at the bottom wall and along the spanwise direction. Direct numerical simulations are performed at a friction Reynolds number of 394. The main purpose behind the present study is to assess the influence of perturbing blowing jets on the large scale structures of the turbulent channel flow. Furthermore, the key role of pressure fluctuations on the energy redistribution among the velocity components is scrutinized by computing the energy budgets of tke and Reynolds stresses, and a physical mechanism is proposed to explain the outer peak on turbulence production due to localized blowing.

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Date submitted: 31 Jul 2014 Electronic form version 1.4