

Abstract Submitted  
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**Statistical characterization of inter-component energy exchange in turbulent channel flows**<sup>1</sup> YONGSEOK KWON, JAVIER JIMENEZ, Universidad Politecnica de Madrid — In turbulent channel flows, it is well understood that the fluctuating velocity extracts energy from the mean flow via the lift-up mechanism (as represented by the production term in the energy budget equations). In this process, the streamwise velocity perturbation receives energy from the mean flow by the linear advection of the streamwise momentum along the cross-shear direction. However, what is still unclear is the precise mechanism by which the strong cross-shear velocity is triggered. In this presentation, this process is investigated from the perspective of the mean turbulent kinetic energy exchange and the inter-component energy exchange processes are statistically characterized. In particular, the primary focus is put on the non-linear interactions leading to the inter-component energy exchange, to shed light on their roles in the sustenance of turbulence in channel flows.

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