

Abstract Submitted  
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**Transversal and longitudinal velocity derivative statistics in shearless turbulence** MICHELE IOVIENO, DANIELA TORDELLA, PETER BAILEY, Politecnico di Torino — We present the temporal evolution of longitudinal and transversal velocity derivative statistics - third and fourth moments - computed by means of DNS, in decaying shearless turbulence mixings. The mixings are generated by the interaction of two isotropic turbulent flows in the absence of a mean shear. The statistics are parameterized on the kinetic energy ratio of the two fields. Inside the mixing, these statistics depart from Gaussian values seen in isotropic turbulence. The anisotropy level reduces with the magnitude of the kinetic energy ratio. Values as high as 55 for the longitudinal kurtosis and 38 for the transversal kurtosis are observed for a kinetic energy ratio of  $10^4$ . In general, on the contrary of what is seen in the velocity statistics, it is observed that the asymptotic values of the velocity derivative statistics depend on the kinetic energy ratio.

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