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Coherent structures of a self-similar adverse pressure gradient turbulent boundary layer¹ ATSUSHI SEKIMOTO, VASSILI KITSIOS, CALLUM ATKINSON, Monash Univ, JAVIER JIMÉNEZ, U. Politécnica Madrid, JULIO SORIA, Monash Univ — The turbulence statistics and structures are studied in direct numerical simulation (DNS) of a self-similar adverse pressure gradient turbulent boundary layer (APG-TBL). The self-similar APG-TBL at the verge of separation is achieved by a modification of the far-field boundary condition to produce the desired pressure gradient. The turbulence statistics in the self-similar region collapse by using the scaling of the external velocity and the displacement thickness. The coherent structures of the APG-TBL are investigated and compared to those of zero-pressure gradient case and homogeneous shear flow.

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