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Statistics of the local turbulent/nonturbulent interface thickness in jets and boundary layers RODRIGO TAVEIRA, CARLOS DA SILVA, IST - Technical University of Lisbon, GUILLEM BORRELL, JAVIER JIMENEZ, School of Aeronautics, Universidad Politecnica de Madrid — Direct numerical simulations (DNS) of turbulent planar jets and boundary layers are used to assess and compare the differences/similarities in the turbulent/nonturbulent (T/NT) interface separating the turbulent from the irrotational flow regions in these flows. Specifically, we focus on the local thickness and local vorticity magnitude across the T/NT interface. Probability density functions of the local T/NT interface thickness in jets show the existence of a plateau between 3 to 10 Kolmogorov micro-scales wide, while the mean thickness is of the order of the Taylor micro-scale, as observed in recent studies. Between 60 to 70% of the local thickness values are among this range. On the other hand only 5% of the local vorticity magnitudes are within the range designated by intense vorticity structures (“worms”) and around 60% of the local vorticity magnitudes after the T/NT interface is in the range of background to weak turbulence. The goal of the work is to characterise what type of structures (vortices/sheets) and in what fraction do they make up the T/NT interface. A similar analysis for a boundary layer is under way.

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