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**Thin shear layers in homogeneous high Reynolds number turbulence and in turbulent boundary layers** TAKASHI ISHIHARA, JST CREST, Nagoya University, KOJI MORISHITA, Kobe University, JULIAN HUNT, University College London — Direct numerical simulations (DNSs) at high Reynolds number show for forced homogeneous isotropic turbulence at $R_\lambda \sim 1000$ that randomly moving, strong thin shear- layers form in the interior (T/In), in which there are high-enstrophy, micro-scale vortex tube structures. These layers have thicknesses of the order of the Taylor micro-scale and the interfaces at the outside of the layers act as a partial barrier to the fluctuations on either side of the layers. In the turbulent boundary layers (TBL) at $R_\lambda \sim 100$, conditional statistics show three different types of thin shear layers; at the outer edge (T/NT), in the interior (T/In) and within the buffer layer near the wall (T/W). These layers act as barriers to the fluctuations on either side and can have controlling effects on the overall flow. The internal and external characteristics and role of the thin shear layers in homogeneous turbulence and in TBL are compared.

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