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Probability density function of pressure in turbulent boundary layers YOSHIYUKI TSUJI, Nagoya University, Japan, YOSHINOBU YAMAMOTO, Yamanashi University, Japan — We study the probability density function (PDF) inside turbulent boundary layer and discuss how their shapes vary depending on the Reynolds number and the distance from the wall. Pressure fluctuations are measured by small pressure probes developed by our research group so far. Experimental data are measured in high Reynolds number facilities. We measured both static pressure and wall pressure simultaneously in turbulent boundary layers up to Reynolds numbers based on the momentum thickness 44000. Direct numerical simulation of channel flow data is used for the present research. It is found that PDF shapes have slightly Re-number dependence but they are self-similar if normalized by their standard deviation. There is no great difference of PDF between channel and boundary layer flows expect near wall region.

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