

Abstract Submitted  
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**Mean wall shear stress boundary condition for large eddy simulation using near-wall streamwise momentum equation<sup>1</sup>** MINJEONG CHO, HAECHEON CHOI, Seoul National University, JUNGIL LEE, Ajou University — The mean wall shear stress boundary condition based on the log law has been proven as an appropriate boundary condition for large eddy simulations (LES) of turbulent channel and boundary layer flows without resolving near-wall region (Lee, Cho & Choi, PoF, 2013). In the present study, we use near-wall streamwise momentum equation following Chung & Pullin (JFM, 2009), to determine the mean shear stress at the wall. In this procedure, the near-wall streamwise momentum equation is averaged over a few off-wall grid points, in which the velocity at the first grid point is approximated with the Taylor series expansion. We test this wall boundary condition for turbulent channel and boundary layer flows, showing good prediction capability at high Reynolds numbers. The result of applying this boundary condition to a separating flow will be also shown at the presentation.

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