Reynolds Number Effects on Kinetic Energy Transfer from Outer Layer in Turbulent Channel Flows YOSHINOBU YAMAMOTO, Yamanashi University, Japan, YOSHIYUKI TSUJI, Nagoya University, Japan — Kinetic energy transfer from the outer layer to the inner layer was investigated by means of DNS database of turbulent channel flows up to $Re\tau = 2000$. On assumption of Dean's empirical equation, energy transfer from the mean velocity component to the turbulence was increased in proportion of 1/7 power of turbulent Reynolds number, but the peak value of the turbulent production was saturated with $Re\tau = 6000$. This might be supported the importance of the second peaks of turbulent intensities in high-Re. In the view points of the ratio of kinetic energy transfer, both results of DNS database and theoretical analysis using logarithmic mean velocity profile represent that the boundary between the outer layer and the inner layer will be determined as the 20% of the channel half-length.

Yoshinobu Yamamoto
Yamanashi University, Japan