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**SGS model based on spatial correlation between turbulence structure and energy transfer** HIROMICHI KOBAYASHI, Keio University — In LES, it is well known that the spatial correlation between the energy transfer term obtained from filtered DNS and that from the Smagorinsky model is rather poor, especially in channel flows. Recently, several references showed that the local equilibrium proposed by Smagorinsky between the subgrid-scale (SGS) energy production and the SGS energy dissipation in the SGS kinetic energy equation seems to be not valid. The energy transfer from grid-scale (GS) to SGS is called the forward scatter. The energy transfer term is often called the SGS energy production term. The spatial correlation between the energy transfer term with the forward scatter and turbulence structure is examined. It is found that the negative second invariant of a velocity gradient tensor surrounding a vortex gives relatively high correlation in not only homogeneous turbulence but also a channel flow. A SGS model based on the correlation is proposed.

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