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Large eddy simulation of flow around a three-dimensional model vehicle¹ JUNG-IL LEE, HAECHEON CHOI, Seoul National University, NOMA PARK, Univ. of Minnesota — Large eddy simulation of turbulent flow around a three- dimensional model vehicle is conducted at Re = 170,000 based on the vehicle height. The three-dimensional shape of this model vehicle is realized by an immersed boundary method in a Cartesian coordinate (Kim et al., JCP 2001). As a subgridscale (SGS) model, we consider the Smagorinsky and Vreman (Vreman, PoF 2004) models with constant model coefficients ($C_s = 0.16$ and $C_v = 0.07$, respectively), and a dynamic Vreman model developed by Park et al. (PoF 2006). The issue on how to dynamically obtain the Vreman model coefficient is re-investigated based on the Germano identity and the global equilibrium between the SGS dissipation and viscous dissipation. The results of simulations are compared with the experimental results by Khalighi et al. (SAE 2001) and will be shown in the final presentation.

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