

Large-eddy Simulation on the Aerodynamics of Simplified Train under Crosswind

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Aerodynamic forces acting on railway vehicles depend not only on the shapes of the vehicles but also on the types of the infrastructures. In this study, the leading car of a train is simplified as a finite-length square cylinder; and the middle car is simplified as an infinite-length square cylinder. We conducted large-eddy simulations (LES) of the flow around the simplified vehicle model on a flat ground, an embankment and viaducts. The LES results confirm that the side force coefficients of the vehicle models change depending on the types of the infrastructures. We investigate the reason why the types of the infrastructures affect the side force acting on the vehicle in terms of the flow field.