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Prediction of Flow-Induced Noise Over a Realistic Automotive Vehicle[1] JAEYONG JEONG, JUNSHIN PARK, DONGHYUN YOU, Pohang Univ of Sci Tech — Turbulent flow interacting with the front parts of an automotive vehicle, such as the cowl-top, A-pillars, and side mirrors are known to be significant sources of acoustic noise. In the present study, sources and propagation of acoustic noise generated over the front parts of a realistic automotive vehicle, known as the DrivAer model are predicted using a novel hydrodynamics-acoustics splitting method. Large eddy simulations are conducted to predict the turbulent flow field which is employed to compute noise sources, while of which accuracy is validated against experimental data. Acoustic fields are predicted using immersed-boundary linearized perturbed compressible equations. Discussion on turbulent flow fields, acoustic sources, and acoustic wave propagation are presented.

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