Abstract Submitted
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Towards large-eddy simulation of maneuvering vehicles using an unstructured overset grid method[1] NICK MORSE, WYATT HORNE, KRISHNAN MAHESH, University of Minnesota — We discuss the development of large-eddy simulation (LES) capability towards the simulation of maneuvering vehicles using the novel unstructured overset numerical algorithm developed by Horne and Mahesh [J. Comput. Phys (2019) 376:585-596]. This method addresses the discrete conservation and scaling challenges of overset methodologies and allows for simulation of flows around complex moving bodies undergoing six degree-of-freedom (6 DOF) motion. We discuss the application of this method to two problems of interest. First, simulations are performed of flow over an axisymmetric body of revolution with comparison to experimental data and previous LES studies. Second, a controller is integrated with the overset methods 6 DOF solver to control of the motion of the body in external fluid flow. Validation examples and applications are discussed.

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