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NUMERICAL SIMULATION OF UAV CARRIER-LANDING INTERACTIVE FLOWFIELD

Abstract

The features of flowfield surrounding the carrier have great influence on the UAV landing process. To investigate the interactive flowfield, there are two landing projects chosen in this paper, the first is landing from behind, and the second one is from sidewise. A all-speed flow solver based on 3D unstructured Cartesian grid is applied to simulate the interactive flowfield during UAV landing. Concurrently there are two simulating approaches employed in current study, one is modeling the relative motion with slip boundary conditions and static grid, and the other is unsteady simulation combined with dynamic meshes. At the beginning of the research, the affect region is ascertained. Then the impact of the parameters that could affect the landing process, such as carrier or UAV travelling velocity, height, landing position, were also simulated. With the support of former research, the UAV landing process that flying along the feasible landing track are modeled in the end.