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Aerodynamic Performance of Hex-Rotor UAV Considering the Horizontal Airflow

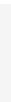|	
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摘要	A vertical take-off and landing (VTOL) unmanned aerial vehicle (UAV) can meet both VTOL and horizontal flight performance, but how to achieve a safe and stable transition is a research focus of this type of aircraft. According to the overall configuration characteristics of VTOL UAV, aerodynamic models of lift fan, lift duct and induced wing surface of VTOL UAV were established. Three flight modes of induced VTOL UAV are studied, including hover, transition and horizontal flight. The method of longitudinal flight balance of UAV in transition mode is also studied. Finally, a UAV is taken as an example to conduct the research of transition flight mode balancing and flight simulation with the method presented in this paper. The results show that the proposed method can reasonably give the control quantity and longitudinal attitude of UAV in the whole transition mode, so that the UAV can achieve a steady transition flight.
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