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Analysis of Unsteady Wall Jet Created by a Coaxial-Rotor in Ground Effect VRISHANK RAGHAV, LOKESH SILWAL, Department of Aerospace Engineering, Auburn University — The study of unsteady characteristics of the outwash of a coaxial multi-rotor configuration drone in-ground effect conditions is presented. A modular, thrust scaled experimental setup consisting of three bladed rotor is used for the current study. The outwash of the coaxial rotor is studied using planar, time-resolved particle image velocimetry (PIV). The experiments are carried out at torque matched trim conditions with varying rotor axial separation distances operating at a tip Reynolds number around 150,000. The effect of axial separation distance on the instantaneous interactions between the tip vortex structures in the outwash region and its influence on the gusts generated in the outwash are investigated. The variation of the outwash characteristics with varying ground heights for the drone is also discussed.

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