Abstract Submitted
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**Drone noise.** CHARLES TINNEY, The University of Texas at Austin, Applied Research Laboratories, JAYANT SIROHI, The University of Texas at Austin, Center for Aeromechanics Research, THE UNIVERSITY OF TEXAS AT AUSTIN TEAM, THE UNIVERSITY OF TEXAS AT AUSTIN TEAM — A basic understanding of the noise produced by single and multirotor drones operating at static thrust conditions is presented. This work acts as an extension to previous efforts conducted at The University of Texas at Austin (Tinney et al. 2017, AHS Forum 73). Propeller diameters ranging from 8inch to 12inch are examined for configurations comprising an isolated rotor, a quadcopter configuration and a hexacopter configuration, and with a constant drone pitch of 2.25. An azimuthal array of half-inch microphones, placed between 2 and 3 hub-center diameters from the drone center, are used to assess the acoustic near-field. Thrust levels, acquired using a six degree-of-freedom load cell, are then used to correlate acoustic noise levels to aerodynamic performance for each drone configuration. The findings reveal a nearly logarithmic increase in noise with increasing thrust. However, for the same thrust condition, considerable noise reduction is achieved by increasing the number of propeller blades thereby reducing the blade passage frequency and both the thickness and loading noise sources that accompany it.

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