

AES Seminar



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Can All Those Rotors Really “Take-Off”?

Friday, September 14, 2018 | DLC | 12:00 P.M.

Abstract: A number of hot topics in aviation — such as small UAS, urban air mobility, eVTOL aircraft — depend on new multirotor aircraft configurations. We know these vehicles can fly in idealized conditions, but what will it take for their use to really “take-off” in society? This presentation will start by reviewing the enablers of these new vehicles. Then, we’ll note a number of pressing issues being examined at Penn State that may limit their wide-spread use. For example, small rotors can easily accrete ice in less-than-perfect atmospheric conditions. When designed for maximum performance, they can be too noisy in urban environments, requiring trade-offs between performance and societal acceptance, and meriting careful engineering design of landing and take-off procedures. They typically depend on new methods of flight control and their business cases often assume highly automated operations allowing for reduced human staffing levels. In a broader sense, these vehicles, and their operations, are so novel compared to traditional methods for certification and operational approval that the aviation community needs to envision new bases for safety cases, including new concepts for human-autonomy teaming, requirements for adaptive, contextualized behavior, and new methods for modeling and assessing safety.

Bio: Amy Pritchett is a professor and head of the Department of Aerospace Engineering at the Pennsylvania State University. Previously, Dr. Pritchett was on the faculty of the Schools of Aerospace Engineering and of Industrial and Systems Engineering at Georgia Tech, and she has also served as the Director of NASA’s Aviation Safety Program. Her research focuses on the intersection of technology, expert human performance and aerospace operations, with a particular focus on designing to support safety. She is editor-in-chief of the Journal of Cognitive Engineering and Decision Making, has received the AIAA Lawrence Sperry Award, the RTCA William Jackson Award and, as a member of the Executive Committee of the Commercial Aviation Safety Team, the Collier Trophy. She earned her ScD, SM and SB in Aeronautics and Astronautics from MIT. Dr. Pritchett has also served on numerous National Research Council Committees addressing the FAA, UAS safety, and NASA’s astronaut corps.



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