



## Jacqueline Thomas

*P.h.D. Candidate  
Massachusetts Institute of Technology*

**Thursday, February 20th**

3:20-4:20 pm | 220 Hammond Building

# Systems Analysis of Community Noise Impacts of Advanced Flight Procedures for Conventional and Hybrid Electric Aircraft

## ABSTRACT

This work examines the community noise reduction possibilities of conventional aircraft with advanced operational flight procedures as well as hybrid electric aircraft. The objective is thus to expand analysis capabilities to enable modeling of the impact on aircraft noise due to advanced operational procedures, such as steeper and delayed deceleration approaches, as well as examine the performance and noise impacts of hybrid electric aircraft through the use of windmilling drag on approach. The community noise impacts of several advanced operational flight procedure concepts are presented for conventional aircraft and how they compare to aircraft flying baseline procedures found in typical radar data. Steeper and delayed deceleration approaches are example flight procedures that are found to enable significant noise reductions on approach for conventional aircraft but require enough drag for the approach to be stable. Windmilling, where engines are driven by the external flow, is an alternative mechanism to create drag during descent that is quieter drag source and is possible in architectures where the fan is powered by an electric motor. Thus, this work also quantifies the noise abatement potential of hybrid electric aircraft using this concept to perform steeper and delayed deceleration approaches. This presentation will show results examining the potential benefits of these concepts.

## BIO

Jacqueline Thomas is a PhD Candidate in Aerospace Engineering at the Massachusetts Institute of Technology. Her research is affiliated with the MIT International Center for Air Transportation and is focused on systems level aircraft design and performance analysis, flight procedure design, and acoustics. She holds a 2014 B.S. in Mechanical Engineering and Aerospace Engineering from UC Irvine and a 2017 M.S. in Aerospace Engineering from MIT. She is a private pilot, has worked with MIT's Jungle Hawk Owl and SSTOL programs, and managed the UCI human powered airplane project.

*Please join us for refreshments before the seminar, at 3:00pm in the Aero Cafe (225 Hammond).*