

**AEROSPACE ENGINEERING AND ENGINEERING MECHANICS (AEEM)
COLLEGE OF ENGINEERING AND APPLIED SCIENCE (CEAS)****SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN****FOR APPLICATION YEAR: 2021****PROJECT TITLE: Aeroacoustics of Electric Aircraft Propulsion**

Daniel Cuppoletti
462 Engineering Research Center
Cincinnati, OH 45221
cuppoldr@ucmail.uc.edu
Phone: 513-604-1297

Project Description

A transformational era in flight is upon us with the increased ubiquity of Unmanned Aerial Systems (UAS), in particular, the burgeoning interest in Unmanned Aerial Mobility (UAM) for mobilizing cargo and passengers. While the precise application and market for these vehicles is still developing, there will definitely be more of these UAM vehicles flying in and around populated areas. One of the key enabling factors for realizing the quantity and frequency of flights that are envisioned will be the noise levels produced by UAM as they operate in populated areas. In order to develop low noise UAM, air vehicle designers need data, design tools, and technology to enable the development of quiet vehicles from conceptual design stage all of the way through detailed design. Currently, there is a dearth of data and capability for predicting the noise produced by UAM until millions of dollars have been spent to design, fabricate, and fly the vehicle. After fabrication of a vehicle, the only method of controlling noise is through retrofitting the system with noise control technology that is usually very limited in achievable noise reduction. This is why acoustics needs to be factored into the earliest stages of conceptual design in order to develop a vehicle that achieve the quietest design possible.