

**AEROSPACE ENGINEERING AND ENGINEERING MECHANICS
COLLEGE OF ENGINEERING AND APPLIED SCIENCE**

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN

FOR APPLICATION YEAR: 2021

PROJECT TITLE: Investigation of the Aeroacoustics of Human Ears in Windy Environments

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Project Description

Aeroacoustics is the study of noise generated from aerodynamic phenomena. A common source of noise, aerodynamic turbulence, is found everywhere from nature to aircraft systems. This project will involve measuring the turbulent flow over a human head and human ear across a range of conditions in a low-speed wind tunnel. This project will provide detailed measurements of the turbulent flow, realistic acoustics in the human ear, and study flow control to reduce turbulence noise on the human ear to improve audibility in windy environments.

The project will involve the scoping and design of an experimental test campaign and application of advanced fluid dynamic measurement techniques to quantify the flow field and acoustic sources. This interdisciplinary research spans engineering, biological systems, and acoustics.