

Faculty of Engineering

ASPIRE Summer Research Program 2026-2027

Project Title: **Mean flow modification and resonance processes**

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Objective

The primary objective of this project is to identify and characterize the changes in the long-time mean flow induced by the screech resonance loop.

Project Details

This project experimentally investigates an underexpanded supersonic jet issuing from an axisymmetric nozzle using high-speed schlieren imaging and acoustic measurements. Acoustic reflectors are placed upstream of the nozzle to suppress or amplify the screech resonance without altering the jet shear layer. The long-time mean flow is obtained by time-averaging the schlieren images for three cases: the baseline jet, screech suppression, and screech amplification. Comparing these mean flow fields will provide new insight into the influence of the screech resonance loop on the long-time mean flow of underexpanded supersonic jets.

Project Timeline

TASK	1	2	3	4	5	6	7	8	9	10
Literature review										
Acoustic measurements										
Schlieren measurements										
Analyzing Results										

Prerequisites

Thermodynamics and gas dynamics

Student Placement Agreement

A student placement agreement must be signed by the project supervisor and the student prior to commencement of the ASPIRE program.

[LV0554-72741 ASPIRE Program Co-Curricular-Student-Placement-Agreement-Short-term.docx](#)