# Infrared and visible deflectometry for full-field vibration imaging - MSc Project #1

Record number : OPR-734

## Overview

**RESEARCH DIRECTION**

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**INFORMATION**

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**ADMINISTRATIVE UNIT(S)**

Faculté de génie
Département de génie mécanique

**LEVEL(S)**

2e cycle

**LOCATION(S)**

Campus de Sherbrooke

## Project Description

PROJECT BACKGROUND AND OBJECTIVES: Deflectometry is a rapidly developing vibration imaging technique. Compared to traditional techniques, deflectometry allows to reach remarkable performances, with an improvement of both time- and space- resolutions by important factors (between 10 and 100 depending on the case). The feasibility of infrared deflectometry for dynamic measurements was demonstrated for the first time in 2021 at UdeS. The two objectives of the DÉFIVIB project are (1) to develop the technological readiness level of deflectometry in both visible and infrared domains, and (2) to apply this technique to complex vibroacoustic problems (e.g., identification of the mechanical properties of wood, or the study of structured materials / metamaterials).

STUDENT ROLES AND IMPLICATIONS: The student will first be responsible for finalizing the integration of existing tools to perform measurements or analysis. The expected result is an application that effectively support deflectometry measurements in laboratory conditions or outside. The distinctive point of the MSc project will be to develop a multi-camera approach, never explored before. We would like to compare a single-camera measurement on a large area, with multi-camera measurements on small but distributed areas. The student will collaborate with other students (MSc and PhD), and co-supervise an undergraduate internship. This topic allows the development of skills in applied research, vibroacoustics and camera imaging. It is expected that the master's degree will take place mainly at the CRASH at the University of Sherbrooke. Free interdisciplinary courses may also be offered through the « Centre Compétence Recherche + »

## Discipline(s) by sector

### Sciences naturelles et génie

Génie mécanique

## Funding offered

Yes

The last update was on 12 March 2024. The University reserves the right to modify its projects without notice.