

# ENVIRONMENTAL ACOUSTICS RESEARCH UNIT

The Environmental Acoustics Research Unit (UMRAE) is a joint research laboratory between Université Gustave Eiffel and CEREMA.

The UMRAE employs over 40 people (researchers, engineers, technical staff and PhD students) and is located on the **Nantes** and **Lyon-Bron** campuses, as well as on the CEREMA site in **Strasbourg**.

Semi-anechoic room,  
Nantes Campus

## RESEARCH TOPICS

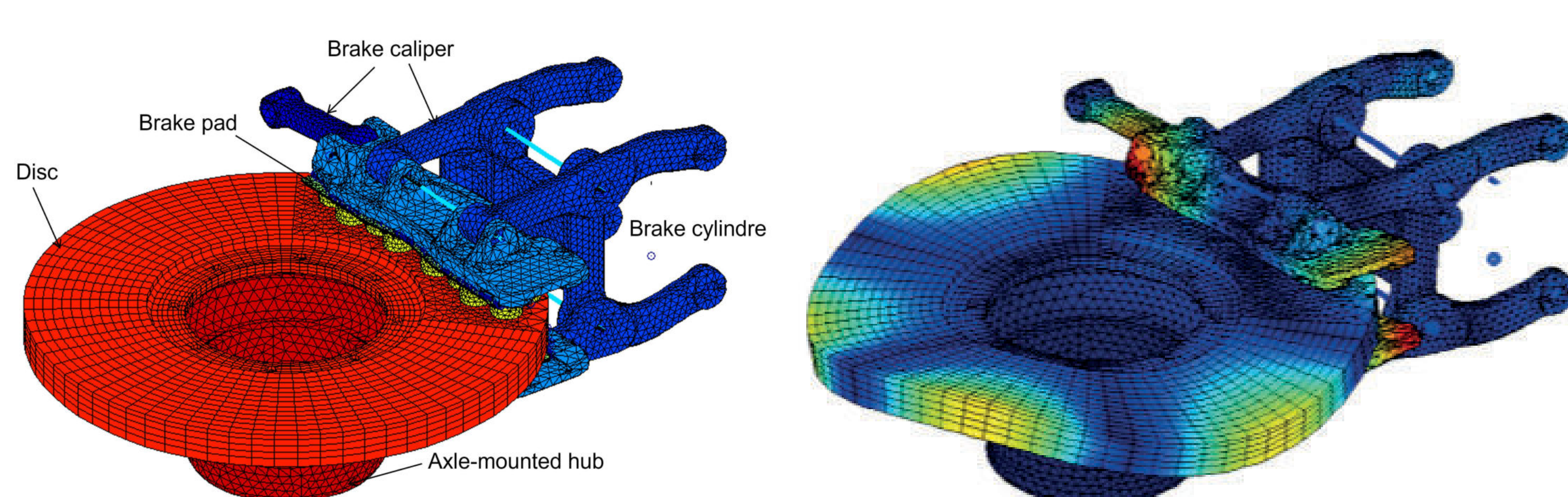
Research activities focuses on environmental noise:

- Noise emissions from road, rail and air transport
- Acoustic propagation in outdoor environments
- Industrial noise (wind turbine)
- Acoustic indicators
- Quality of sound environments
- Acoustic materials
- Uncertainties and sound levels
- Acoustic prediction tools
- Noise sensors
- Effects of noise on biodiversity

## GOALS

Research activities focus on **reducing noise and its impact on the environment**, and more specifically on :

- **Improve scientific knowledge** of noise generation, propagation and reception in the environment;



Simulation of vibratory instabilities responsible for railway squeal noise using a disc brake model.

- **Develop acoustic methods for experimental characterization** of sound sources, materials, structures, sound levels and relevant observables.
- **Develop and disseminate acoustic prediction tools and measurement devices** for the engineering community.

To carry out its activities, the UMR relies on a number of test facilities and collaborations with academic and socio-economic partners.

The UMR is involved in numerous research projects funded by ADEME, ANR, Europe, the Pays de la Loire Region, FUI, the French Ministry of Ecology, etc.

### Links:

[www.umrae.fr](http://www.umrae.fr)

@UMRAE\_lab



Urban noise measurements



Noise map of downtown Lorient, produced with NoiseModelling as part of the ANR CENSE project.

## EQUIPMENTS

- Semi-anechoic room
- Material characterization
- Rolling noise measurement
- Contact test ring
- 3D texture measurement
- Microphonic arrays
- Wheel/rail roughness
- Impedance measurement devices
- Directivity frame

Wind turbine noise measurements



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