# Internship Institut ∂'Alembert – LAM Team – 2026

# Simplified calibration of virtual acoustics for VR and AR

Place: LAM team, Institut Jean le Rond ∂'Alembert, Jussieu (Sorbonne Univ.), Paris

Duration: 4-6 months

Start: March (can adapt to school schedules)

Supervision: David Poirier-Q.[1] (researcher)

Co-supervision: Brian F.G. Katz[2] (research director)

Salary: Following university policy.

## CONTEXT AND GOAL

The Sound and Space group within the LAM team investigates room acoustics, spatial sound, and interaction in mixed reality. This internship builds on studies using virtual and augmented acoustics to support applications such as music rehearsal, exploration without visual cues, and immersive gaming. In these applications, users hear their own voice or instrument directly, alongside artificially generated reverberation. Achieving a realistic acoustic experience requires balancing the reverberation level against this direct sound. An existing calibration procedure establishes this balance, but it is time-consuming and requires equipment rarely available in home VR/AR setups.

The aim of this internship is to develop simplified calibration procedures using readily available consumer equipment and assess how these simplifications affect perceived acoustic realism in typical use cases, such as gaming and music rehearsal.

## EXPECTED RESULTS

The intern will first study and implement the existing calibration procedure to establish a reference. They will then design and implement one or more simplified alternatives suitable for everyday VR/AR use, reducing equipment requirements and setup effort. The proposed methods will be evaluated against the reference calibration using objective acoustic measurements and perceptual experiments. Passive listening tests and active tasks, in which participants use their own voice or instrument, will assess the perceptual consequences of the simplifications. If time permits, the findings will be developed into a paper for submission to a scientific conference, with the possibility of a presentation after the internship.

## SOUGHT SKILLS

Experience with Matlab or Python; familiarity with Unity/C# or Max/MSP; an interest in acoustics and perceptual evaluation; attentive listening, data analysis, and clear scientific writing.

**CONTACT** David Poirier-Q. (`david.poirier-quinot@sorbonne-universite.fr`)

[1] David Poirier-Q. website: `https://pyrapple.github.io`.

[2] Brian F. G. Katz website: `http://www.lam.jussieu.fr/Membres/Katz/index.php?page=accueil`.