Postdoctoral Research Position
Resolvent-based Optimisation for Airframe Aeroacoustics

Project SALSA: A DGAC-funded initiative under AIRBUS coordination
(Simulations Acoustiques pour la modéLiSation du bruit Avion)

The *Aerodynamics, Acoustics & Turbulence* (2AT) group at Institut Pprime is seeking a highly motivated postdoctoral researcher to join a collaborative project with Airbus.

Project overview

Building on recent advances in mean-field-based linearised modelling for aeroacoustics [1, 2], and in particular for modelling sound generation by flow–structure interaction [3–6], the 2AT group is developing resolvent-based shape-optimisation tools. The successful candidate will collaborate with Airbus and 2AT researchers to develop an adjoint-based shape-optimisation framework for landing-gear aeroacoustics. The numerical methodology will rely on a resolvent formulation of the Boundary Element Method. Optimised geometries will be tested in the anechoïc windtunnels of Institut PPRIME using microphone-array based source localisation.

Position details

- **Duration:** 24 months (with potential continuation on related projects)
- **Start date:** May 2026 (± 2 months)
- **Location:** Institut Pprime, Poitiers, France
- **Net salary:** €2.4–3.3k per month

Required qualifications

- PhD in Mechanical or Aerospace Engineering (or a closely related field)
- Proven experience in numerical simulation for fluid mechanics and/or aeroacoustics
- Strong background in linear algebra and signal processing

Desired qualities

- Strong teamwork and communication skills
- Motivation for applied, high-impact research
- Capacity for independent and creative problem-solving
- Openness to collaboration with industrial partners (Airbus)
- Interest in future modelling projects for aerospace applications

A unique opportunity

This position offers an opportunity to work at the interface of fundamental and applied research, connecting advanced modelling and computation with real-world aeronautical challenges. Depending on project development and results, further collaboration with Airbus and related research initiatives may follow.

To apply

Please send a CV and cover letter outlining your relevant experience and motivation to: peter.jordan@univ-poitiers.fr; vincent.valeau@univ-poitiers.fr; david.marx@univ-poitiers.fr.

References

[1] P. Jordan and T. Colonius. Wave packets and turbulent jet noise. *Annual Review of Fluid Mechanics*, 45: 173–195, 2013.

[2] A. V. G. Cavalieri, P. Jordan, and L. Lesshafft. Wave-packet models for jet dynamics and sound radiation. *Appl. Mech. Rev.*, 71(2), 2019.

[3] A. V. G. Cavalieri, P. Jordan, W. R. Wolf, and Y. Gervais. Scattering of wavepackets by a flat plate in the vicinity of a turbulent jet. *Journal of Sound and Vibration*, 333(24):6516–6531, 2014.

[4] S. Piantanida, V. Jaunet, J. Huber, W. Wolf, P. Jordan, and A. V. G. Cavalieri. Scattering of turbulent-jet wavepackets by a swept trailing edge. *J. Acou. Soc. America*, 140(6), 2017.

[5] P. Jordan, V. Jaunet, A. Towne, A.V.G. Cavalieri, T. Colonius, O. Schmidt, and A. Agarwal. Jet-flap interaction tones. *J. Fluid Mech.*, 853:333–358, 2018.

[6] J. Huber, G. Pont, P. Jordan, and M. Roger. Wavepacket modelling of jet-flap interaction noise: from laboratory to full-scale aircraft. *Flow, Turbulence and Combustion*, 113(3):773–802, 2024.