

# Paul Magron

INRIA Research Scientist

INRIA Nancy Grand-Est  
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## Current position

Since 2021 **Research scientist**, *INRIA Nancy Grand-Est, Multispeech team*, Nancy, France.  
Audio signal processing: sound source separation, speech enhancement, audio inpainting/restoration.  
Phase and complex-valued data modeling for time-frequency analysis.  
Statistical models, optimization, and machine learning (matrix factorization and deep learning) for audio.

## Professional experience

- 2019 - 2021 **Postdoctoral researcher**, *IRIT, Université de Toulouse, CNRS*, Toulouse, France.  
Representation learning for content-aware music recommendation.  
Phase recovery with non-quadratic divergences in audio.
- 2017 - 2019 **Postdoctoral researcher**, *Tampere University*, Tampere, Finland.  
Audio/music source separation, phase-aware probabilistic models, deep learning.  
Real-time speech separation in a collaborative project with the Eriksholm Research Center (Denmark).
- 2013 - 2016 **Ph.D.**, *Télécom ParisTech, Signal and Image Processing department*, Paris, France.  
Audio source separation, phase recovery, time-frequency analysis, probabilistic models (anisotropic Gaussian, alpha-stable), nonnegative matrix factorization.
- 2013 **Research intern**, *Centro de Investigacion en Tecnologias de Audio*, Santiago, Chile.  
Complex resonator acoustics, digital filter design, sound synthesis.
- 2011 - 2012 **Trainee engineer**, *Airbus - Propulsion Integration Domain*, Toulouse, France.  
Propulsion systems weight management, modeling of water hammer pressure surge observed during engine start.
- 2010 **Research Assistant**, *UR NAVIER Research Center*, Paris, France.  
Mechanical analysis of straw balls composite panels.

## Supervision

- PhD students **Nasser-Edine Monir**, *co-supervised with R. Serizel*, 2022 - 2025.  
Multichannel speech enhancement for patients with auditory neuropathy spectrum disorders.
- Postdocs **Marina Krémé**, *co-supervised with A. Deleforge*, 2022 - 2023.  
Optimization for phase retrieval applied to audio restoration.
- M2 interns **Louis Lalay**, *co-supervised with M. Sadeghi*, 2023.  
Dictionary learning for deep unsupervised speech separation.
- Louis Bahrman**, *co-supervised with A. Deleforge*, 2022.  
Repairing audio signals using compact phase-aware models.

## Teaching

- Since 2021 **Teaching assistant**, *Université de Lorraine*, Nancy, France.  
Neural networks (lab work), automatic speech recognition (lab work)
- 2018 - 2019 **Teaching assistant**, *Tampere University*, Tampere, Finland.  
Advanced audio signal processing (lecture, lab work, project supervision), Introduction to audio signal processing (lab work, project supervision).
- 2014 - 2016 **Teaching assistant**, *Télécom ParisTech*, Paris, France (128h).  
Nonnegative Matrix Factorization (lecture and lab work), fundamentals of psychoacoustics (lecture), first-year engineering student projects and final projects (supervision).

## Distinctions

- 2020 Short-term mobility grant from the Maupertuis program for France-Finland scientific collaboration.
- 2018 Best Paper Award at IWAENC 2018 for the paper titled "Towards complex nonnegative matrix factorization with the beta-divergence", by P. Magron and T. Virtanen.

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## Scientific evaluation

- PhD jury **Pierre-Hugo Vial**, *IRIT, Université de Toulouse, CNRS*, Toulouse (examiner).  
Topic: Phase retrieval and audio signal reconstruction with non-quadratic cost functions.  
PhD supervised by Cédric Févotte and Thomas Oberlin; defended on November 29th, 2022.
- M2 jury **Jean-Daniel Pascal**, *Sorbonne Université, IRCAM, Télécom Paris*, Paris (reviewer).  
Topic: Sound source separation via a multivariate  $\alpha$ -stable mixture model.  
M2 intern supervised by Mathieu Fontaine and Roland Badeau; defended on September 15th, 2022.
- Reviewing Journals: IEEE Transactions on Audio, Speech, and Language Processing, IEEE Transactions on Signal Processing, IEEE Signal Processing Letters, IEEE Access, Eurasip journal, Speech communications, Multimedia Systems, MDPI.  
Conferences: IEEE International Conference on Audio, Speech, and Signal Processing (ICASSP), Digital Audio Effects (DAFx) conference, International Workshop on Acoustic Signal Enhancement (IWAENC), Interspeech.  
Projects: Czech Science Foundation (Czech republic), MITACS program (Canada).

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## Scientific services

- Organizer IEEE IJCNN 2021 Special session on Representation Learning for audio processing.
- Administrative Member of the INRIA commission for Scientific Information & Edition (IES) (since 2022).

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## Education

- 2013 - 2016 **Ph.D.**, *Télécom ParisTech, Signal and Image Processing department*, Paris, France.  
Thesis: Phase recovery based on signal modeling: application to audio source separation.
- 2016 **Summer school in Image and Signal processing**, *GRETSI*, Peyresq, France.  
Probabilistic modeling and Bayesian inference in signal and image processing.
- 2012 - 2013 **Master of sciences**, *Université Pierre et Marie Curie, Télécom ParisTech and IRCAM*, Paris, France.  
Acoustics, Signal Processing and Computer Science applied to Music (ATIAM).  
Thesis: Modeling and simulation of the Antara, a Latin American closed-end pan flute.
- 2009 - 2011 **Engineering degree**, *École des Ponts ParisTech*, Paris, France.  
Majors: materials, structures and fluids mechanics.  
Minors: acoustics, thermodynamics, aerodynamics.
- 2007 - 2009 **Preparatory school to French “Grandes Écoles”**, *Lycée Pierre de Fermat*, Toulouse, France.  
Majors: mathematics, physics and computer science.
- 2007 **Baccalaureate in sciences and mathematics**, *Lycée Pierre de Fermat*, Toulouse, France.  
Major in mathematics, graduated with first class honors.

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## Languages

- Programming Python (advanced), Matlab/Octave (advanced), C++ (beginner), Faust (to reactivate).
- Natural French (native), English (fluent), Spanish (fluent), Finnish (beginner).

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## Personal interests

- Music I've been playing the electric guitar for more than fifteen years, mostly in jazz and progressive rock/metal. I am a student at the conservatory, where I study in both the classical curriculum (music theory/*solfège* and composition) and the jazz department.
- Taekwondo I've trained for about ten years and am a black belt (1<sup>st</sup> Dan), and I frequently assist my instructor. I competed in technical and sparring competitions.