

# David Poirier-Quinot

## Audio VR Researcher

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### EXECUTIVE SUMMARY

I'm a researcher, presently focused on sound spatialisation, perception, and room acoustics simulation for virtual and augmented realities. I studied these fields along with signal processing and computer sciences at d'Alembert Institute, Imperial College London, IRCAM, LIMSI, and ETIS labs.

With a background in Mathematics, Physics and Chemistry, I obtained a Master's degree in signal processing and telecommunications from the ENSEA graduate school of Electrical Engineering (France) in 2011, and received a Ph.D. degree in acoustics, signal processing, and computer science from Sorbonne University (Paris VI, France) in May 2015.

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### EDUCATION

**PhD in Computer Science, Acoustics, and Virtual Reality** 2012 – 2015

CNRS (LIMSI, ETIS), Airbus Defense & Space, Paris

*Signal Processing, DOA estimation (EM), Acoustics, Ergonomics, VR, Sound Design*

**Master Degree in Network and Telecom Engineering** 2008 – 2011

ENSEA graduate school of electrical eng. and computer science, Cergy

*Network, Telecommunications, Signal Processing, Analog Electronics*

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### SKILLS

**Language** French (native), English (fluent), Spanish (basic)

**Development** Python, C++, C#, Javascript, Matlab, HTML, CSS, Lisp, Java, C, Objective-C

**Software** Blender, Unity3D, Unreal Engine, Max, Juce, Pd, CATT-Acoustic, Photoshop

**Others** Perceptive exp. design, data analysis, scientific writing, fonctionnal analysis, IP

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### WORK EXPERIENCE

**Postdoctoral Researcher** May 2019 – Today

IRCAM & d'Alembert Institute collaboration, CNRS, Sorbonne University, Paris

Accurate real-time room acoustic simulation for interactive architectural exploration with the visually-impaired. Binaural perception in VR: impact of realistic room reverb on performance and immersion.

**Postdoctoral Researcher** Oct. 2017 – April 2019

d'Alembert Institute – CNRS – Sorbonne University, Paris

Binaural perception in VR applications (partnership with Facebook Reality Labs): impact of individualised binaural rendering on performance and immersion, HRTF learning.

- Postdoctoral Researcher** May 2016 – Sept. 2017  
 IRCAM – CNRS, Paris  
 Distributed spatial audio via web-based applications. Development of WebAudio spatialisation libraries for mixed realities. Design of a framework for real-time auralisation in VR architectural acoustics.
- Postdoctoral Researcher** Nov. 2015 – May 2016  
 Imperial College London, London  
 Study of the impact of room acoustics on 3D audio perception. Perceptive comparison of reverberation techniques for 3D audio. Hearing loss simulation.
- Postdoctoral Researcher** June 2015 – Oct. 2015  
 LIMSI – CNRS, Paris  
 Room acoustic simulation and 3D sound design for virtual reality.
- Postdoctoral Researcher** May 2016 – Apr. 2018  
 Imperial College London, London  
 (*part-time*) Design of a toolkit for binaural spatialisation. Simulation of the impact of hearing loss on sound perception. Study of the impact of Ambisonic room reverb order on auditory scene perception.
- Postdoctoral Researcher** Apr. 2015 – June 2015  
 Imperial College London, London  
 Design of a VR experiment on audio subjective perception in room acoustics.
- PhD Thesis** Feb. 2012 – Mar. 2015  
 Airbus Defense & Space, CNRS (LIMSI, ETIS), Paris  
 “Design of a radio Direction Finder for search and rescue operations”. Interfacing of propagation models and virtual environments for ecological assessment of Direction Finder designs performance.
- Research Engineer** Sept. 2011 – Jan. 2012  
 LIMSI – CNRS, Paris  
 Implementation and deployment of sound spatialisation systems (Ambisonic, Binaural, WFS). Development of a scene graph editor for VR architectures.

## MAIN PROJECTS

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- Anaglyph** 2018  
 High-definition binaural spatialisation engine. <http://anaglyph.dalembert.upmc.fr>
- Cloud Theatre** 2018  
 Virtual performance in the Athénée Theatre, Paris. Visual rendering, actor holograms, room acoustic and voice directivity simulation. <https://pyrapple.github.io/pages/cloud-theatre.html>
- EVERTims** 2017  
 Open source framework for real-time auralisation in architectural acoustics and virtual reality. <http://evertims.github.io>
- Ghost Orchestra** 2016  
 Virtual recreation of a concert in Notre-Dame de Paris Cathedral. Room acoustic simulation and visual rendering. <https://groupeaa.limsi.fr/projets:ghostorch>

Scene graph editor for VR architectures. Adaptation of the Blender Game Engine to support CAVE, VideoWall, HMD, and external rendering modality engines. <https://blendervr.limsi.fr>

## MAIN PUBLICATIONS

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D. Poirier-Quinot, G. Parseihian, and B. F. G. Katz, “Comparative study on the effect of Parameter Mapping Sonification on perceived instabilities, efficiency, and accuracy in real-time interactive exploration of noisy data streams,” *Displays*, vol. 47, pp. 2 – 11, 2017

L. Picinali, A. Wallin, Y. Levtov, and D. Poirier-Quinot, “Comparative perceptual evaluation between different methods for implementing reverberation in a binaural context,” in *AES Convention 142*, (Berlin, Germany), May 2017

A. Politis and D. Poirier-Quinot, “JSAmbisonics: A Web Audio library for interactive spatial sound processing on the web,” in *Interactive Audio Systems Symposium, York, UK*, pp. 1–8, 09 2016

D. Poirier-Quinot, B. Matuszewski, N. Schnell, and O. Warusfel, “Nü Soundworks : using spectators smartphones as a distributed network of speakers and sensors during live performances,” in *Web Audio Conference*, (London, United Kingdom), Aug. 2017

D. Poirier-Quinot, B. F. Katz, and M. Noisternig, “EVERTims: Open source framework for real-time auralization in architectural acoustics and virtual reality,” in *20th International Conference on Digital Audio Effects (DAFx-17)*, (Edinburgh, United Kingdom), Sept. 2017

B. F. G. Katz, B. N. J. Postma, D. Poirier-Quinot, and J. Meyer, “Experience with a virtual reality auralization of Notre-Dame Cathedral,” in *Acoustical Society of America*, vol. 141, (Boston, United States), pp. 3454 – 3454, June 2017

D. They, D. Poirier-Quinot, B. N. Postma, and B. F. G. Katz, “Impact of the Visual Rendering System on Subjective Auralization Assessment in VR,” in *Virtual Reality and Augmented Reality* (J. Barbic, M. D’Cruz, M. Latoschik, M. Slater, and P. Bourdot, eds.), no. 10700 (EuroVR 2017) in *Lecture Notes in Computer Science*, pp. 105–118, Springer, 2017

See <https://pyrapple.github.io/pages/publications.html> for an exhaustive list of publications.