



Dr Sami KARKAR

R&D Consultant

Acoustics & Vibrations

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Google Scholar profile: <https://scholar.google.fr/citations?user=pGjc4CQAAAAJ>

1. RESEARCH EXPERTISE

Multiphysics simulation (electromechanical coupling, RF-mechanical, piezoelectricity...)
Experimental techniques in mechanical vibrations and acoustics
Smart materials for acoustics and vibrations
Active acoustic metamaterials
Numerical methods for nonlinear systems
Acoustics of musical instruments
Climate physics

2. PROFESSIONAL EXPERIENCE

2019—	Freelance consultant: R&D in acoustics and vibrations
2016—2019	Research fellow at ECL-CNRS (Lyon, France): multiphysics coupling, RF-mechanical coupling, piezoelectric effect, active acoustic metamaterials, non reciprocal acoustics, acoustic black holes, experimental acoustics
2013—2015	Research fellow at EPFL (Swiss Federal Institute of Technology - Switzerland): electroacoustics, room acoustics, vibrations and noise control, active acoustic metamaterials, multiphysics simulation, experimental methods in acoustics
2012—2013	Researcher - engineer at CEA Saclay (France): climate physics, atmosphere reduced models
2009—2012	Doctoral studies at LMA-CNRS (Marseille, France): “Numerical methods for nonlinear dynamical systems; application to self-sustained oscillations in musical instruments” (dir. Pr. Dr. Bruno Cochelin and Dr. Christophe Vergez)
2008	Attaché for academic and scientific cooperation at the French Embassy in Turkey (Ankara, Turkey)
2007 (6 months)	Master’s research project at LMA-CNRS (Marseille, France): physics of musical instruments, processing and perception of musical audio signals (classification and identification of sounds from the saxophone family, natural and processed)
2005 (5 months)	Master 1st year research project at UNSW (Sydney, Australia): physics of musical instruments: mode locking in the transverse flute. Theory, Models, Experiments. (dir. Pr. Dr. Joe Wolfe)
2004 (1 month)	Bachelor project at ENSTA-Paristech (Gifs-sur-Yvette, France): experimental fluid mechanics: design and construction of a vortex ring generator (dir. Dr. Olivier Cadot)

3. INDUSTRIAL COLLABORATION

Plastic Omnium: coll. with ECL-CNRS (Lyon, FRANCE), design and optimization through simulation of frequency-steerable ultrasonic transducer for thin plates (Lyon, 2020-2021, freelance)

ENGIE: coll. with Laborelec-ENGIE (Belgium) and St-Etienne Univ. (France), advanced signal processing techniques for rotating machines monitoring through simple accelerometer sensors (2020-2021, freelance)

Airbus: "ETNAA" ANR project with LAUM (Le Mans, France) and ECL-CNRS (Lyon, France) - augmented acoustic black holes (2018, ECL-CNRS)

Plastic Omnium: coll. With ECL-CNRS (Lyon, FRANCE) simulation, design and experimental proof-of-concept of directive transducers for guided waves in thin plates (2017, ECL-CNRS)

Safran Nacelles: European project with EPFL (Switzerland) and ECL-CNRS (Lyon, France) on active acoustic liners for turbojet engine nacelles noise mitigating (2015-2017, EPFL)

Radiall: DGA-funded project (French military research agency) coll. with Thales on mechanically induced RF noise in connectors (2016, ECL-CNRS)

SNCF: feasibility study of an electroacoustic transducer for train track alarm signalling (2015, EPFL)

Peugeot SA: low frequency electroacoustic absorbers for modal equalization in automobile vehicles (2014, EPFL)

PSI Audio / Goldmund: active low frequency absorbers for room modal equalization (2013-2015 EPFL)

4. DEGREES AND QUALIFICATIONS

2013 & 2018	Qualification for Assistant Professor positions (France)	
2012	Doctorate in Acoustics	Aix-Marseille University
2007	Master 2 Mechanics, Physics and Modelling major in Acoustics - w. hon.	Aix-Marseille University
2006	"Agrégation" - Competitive state exam in Physics for high school teacher's qualification (France)	
2005	1st year Master in Fundamental Physics	ENS Cachan / UPMC
2004	Bachelor in Fundamental Physics	ENS Cachan / UPMC
2003	Bachelor in Mechanical Engineering	ENS Cachan / UPMC
2002	Entering the competitive École Normale Supérieure de Cachan	

5. TEACHING EXPERIENCE

- 2016–2018** **Supervision of student projects, and of Bachelor, Master and Doctoral students**
Distributed control, smart materials, adaptive structures, active metamaterials, bibliographic techniques, simulation, experimental methods
ECL-CNRS (Lyon, France)
- 2013–2017** **Supervision of Master and Doctoral students**
Intelligent acoustic materials, adaptive structures, active metamaterials, electroacoustics, room acoustics, impedance control
EPFL (Lausanne, Switzerland)
- 2013–2014** **Lecture in Acoustics (Bachelor and 1st year Master)**
acoustical physics, music acoustics, electroacoustics
EPFL (Lausanne, Switzerland)
- 2009–2011** **Teaching Assistant:** practical and oral examination preparation for the “CAPES” state competitive exam for secondary school teachers in Physics
Aix-Marseille Université
- 2009–2011** **Supervision of student research projects (Bachelor level)**
theory, numerical models, acquisition and processing of acoustical signals
LMA-CNRS (Marseille, France)
- 2006–2007** **Private lessons (bachelor level)**
maths, physics et chemistry
- 2005–2006** **High-school teaching internship:** lectures and practicals in physics and chemistry (final year level)
Lycée Louis-le-Grand (Paris, France)