1 Curriculum vitae

PERSONAL DATA

Family Name, First Name : **GUILLARMOU, Colin**
Date/place of birth : 15/09/1977, Brest (France), French citizen.
Webpage : https://www.imo.universite-paris-saclay.fr/∼guillarmou/
ORCID Number : 0000-0002-8072-8522

EDUCATION

2009 Habilitation thesis, Université de Nice, Nice (France) : *On several spectral problems on asymptotically symmetric non-compact manifolds.*

2000-2004 PhD thesis in Université de Nantes, Nantes (France), supervised by Laurent Guillopé : *Resonances on asymptotically hyperbolic manifolds.*

CURRENT POSITION

Since 2021 CNRS Research director (1st class), Université Paris Saclay, Orsay (France).

PREVIOUS POSITIONS

2016-2020 Research director (2nd class), Université Paris Saclay, Orsay (France)

2010-2016 CNRS researcher (1st class), ENS Paris (France).

2012-2015 Part-time professor at École Polytechnique, Palaiseau (France).

2005-2009 CNRS researcher (2nd class), Université de Nice, Nice (France).

2004-2005 Visiting assistant professor, Purdue University, West-Lafayette (USA).

FELLOWSHIPS AND AWARDS

2025-2029 Simons Collaboration grant

2017-2022 ERC Consolidator grantee.

2018 Speaker at the ICM, PDE section, Rio de Janeiro.

2018 Paul Doistau-Emile Blutet Prize of the French Academy of Sciences.

2010 Bronze Medal, CNRS, Mathematics.

GRANTS

2025-2029 PI of Simons Collaboration grant "Probabilistic Path to QFT"

2017-2022 PI of the ERC consolidator project IPFLOW no 725967

2013-2017 Member of the ANR grants 13-JS01-0006 and 13-BS01-0007-01

2011-2014 Member of the ANR grant ANR-10-BLAN 0105

2009-2013 PI of the ANR grant JCJC-0099-01

2005-2008 Member of 2 ANR grants : ANR JC05-52556 and ANR JC05-46063

2005-2008 Grant NSF DMS0500788 as co-PI with A. Sa Barreto, Purdue University (USA)

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

2012-2024 Supervisor of 9 PhD students, including 4 current ones.

2017-2022 Supervisor of 3 postdocs, Univ. Paris Saclay, France

2005-2025 Supervisor of 13 master students, ENS Paris & Univ. Paris Saclay, France.

PUBLICATIONS

74 peer reviewed published papers in maths journals (including Acta Math., Annals of Math, Inventiones Math., Journal of AMS, Duke Math J., Publ. IHES, Ann. de l'ENS...). See https ://www.imo.universite-paris-saclay.fr/∼colin.guillarmou/publi.html

TEACHING ACTIVITIES

2022 PhD course : Conformal Bootstrap for Liouville CFT, EPFL Lausanne (Switzerland).

2019 Master 2 course : Rigidity and geometry Inverse Problems, Univ. Paris Saclay (France).

2011-2015 Undergraduate teaching 72h/year, Ecole Polytechnique, Palaiseau (France).

2011-2015 Working group seminars : ENS Paris (France).

2013 Master 2 course : Inverse Problems 24h, Univ. Paris 6 (France).

2004-2005 Undergraduate teaching, 4 courses, Purdue Univ. (USA).

2000-2004 Teaching assistant, 64h/year, undergraduate problem classes, University of Nantes (France)

2005-2026 regularly invited for mini-course series in sumemr school and international conferences

DISTINGUISHED LECTURES

2023 Plenary speaker, Applied Inverse Problems Conference, Göttingen (Germany).

2019 Pinski Lectures, Univ. Northwestern (USA).

2018 Invited speaker at the ICM, PDE section, Rio de Janeiro.

2018 Gilbarg Lectures, Stanford Univ. (USA).

2015 Hausdorff Colloquium, Bonn (Germany).

ORGANIZATION OF SCIENTIFIC RESEARCH PROGRAMS

2019 Main organizer : Research trimester on *Microlocal Analysis*, MSRI Berkeley (USA).

2015 Main organizer : Research trimester on *Inverse Problems*, IHP Paris (France)

2015 Main organizer : Research trimester on *Modern theory of wave equations*, ESI Vienna (Austria)

2005-2024 Organizer of 21 conferences on inverse problems, microlocal analysis, CFT, dynamical systems, quantum chaos, quantum field theory... See the list below.

INSTITUTIONAL RESPONSIBILITIES

2025-2029 Member of the National Selection Committee of CNRS.

2023 Member of the selection committee for ANR grants, France.

2022– Scientific board of the Oberwolfach Mathematical Center, Germany.

2020-2025 Head of the Harmonic Analysis team in Orsay (Univ. Paris Saclay).

2017-2026 Director of the International Research Network France-Romania-Hungary of CNRS.

2017– Member of the prospective hiring committee in Orsay (Univ. Paris Saclay).

2017– Scientific advisory board of the PDE Network of CNRS

2008-2024 Member of hiring committees (Assistant and Full Professors) : Univ. Paris 12 (2008), Univ. Orléans (2011), Univ. Paris 13 (2012). Univ. Grenoble (2013), Univ. Créteil (2014), Univ. de Nice (2014), Univ. Metz (2017), Univ. Nantes (2018), Univ. Paris Saclay (2016-2017-2020-2021-2022), Strasbourg (2020), Cergy (2024), Univ. Paris Saclay (2026).

2005-2026 Jury member or referee for 22 PhD & 12 habilitation theses (France, Germany, UK).

REVIEWING ACTIVITIES

2025– Editor *International Mathematical Research Notices*

2023– Editor, *Annales de la Faculté des Sciences de Toulouse*

2020– Editor, *Analysis and PDE*. Chief Editor starting 2026.

2019-2025 Editor, *Astérisque SMF*

2018-2023 Editor, *Journal de l'Ecole Polytechnique*

2010-2022 Scientific evaluator for ERC Advanced grants, NSF (USA), PIMS (Canada), CINECA (Italy), ISF (Israel) and referee for many journals (JAMS, Annals of Math, Inv. Math, Duke Math. J., etc).

INVITATIONS IN FOREIGN UNIVERSITIES

2022 2.5 months at EPFL, invited professor, Switzerland.

2019 3 months at MSRI Berkeley as Simons Professor, USA.

2019 2 month as visiting professor at Sydney University, Australia.

2012 1 month at CRM Montréal, Canada.

2011 1 month at ANU, Canberra, Australia.

2010 1 month at MSRI Berkeley, USA.

2009 1 semester at IAS Princeton, USA.

2008 1 month at MSRI Berkeley, USA.

2007 2 months at Stanford, USA.

2007 3 months at ANU, Canberra, Australia.

2006 6 months at ANU, Canberra, Australia.

SELECTED PUBLICATIONS

In geometric scattering theory, I obtained a proof of the meromorphic extension of the resolvent of the Laplacian on asymptotically hyperbolic manifolds and all geometrically finite hyperbolic manifolds in :

C. Guillarmou, *Meromorphic properties of the resolvent on asymptotically hyperbolic manifolds*, **Duke Math. Journal** 129 (2005), no. 1., 1-37.

C. Guillarmou, R. Mazzeo, *Spectral analysis of Laplacian on geometrically finite hyperbolic manifolds*, **Inventiones Math.**, 187 (2012) no 1, 99–144.

In inverse problems, I solved in dimension 2 the partial data Calderón problem consisting in determining a potential or a metric from the Dirichlet-to-Neumann operator on the boundary :

C. Guillarmou, L.Tzou, *Calderon inverse problem with partial data on Riemann surfaces*, **Duke Math. Journal** 158 (2011), no 1. 83-120

I constructed a Chern-Simons theory and related it to the renormalized volume of convex co-compact hyperbolic 3-manifolds in :

C. Guillarmou, S. Moroianu, *Chern-Simons line bundle on Teichmüller space*, **Geometry and Topology** 18 (2014) 327–377.

In the field of quantum chaos, I described semi-classical limits of generalized eigenfunctions of Laplacian on asymptotically hyperbolic/Euclidean manifolds in :

C. Guillarmou, F. Naud, *Equidistribution of Eisenstein series on convex co-compact hyperbolic manifolds*, **Amer. Journ. Math.**, 136 (2014), no 2, 445–479.

S. Dyatlov, C. Guillarmou, *Microlocal limits of plane waves and Eisenstein functions*, **Annales de l'ENS**, 47 (2014) no 2, 371–448.

On the theory of Ruelle resonances and hyperbolic dynamical systems, I solved a conjecture of Smale on the meromorphic continuation of the Ruelle Zeta function $\zeta(s)$ of Axiom A flows, and I proved the Fried conjecture in dimension 3 on the link between Reidemeister torsion and $\zeta(0)$ in

S. Dyatlov, C. Guillarmou, *Pollicott-Ruelle resonances for open systems*, **Annales IHP** 17 (2016), no 11, 3089–3146.
N.V. Dang, C. Guillarmou, G. Riviere, S. Shen, *The Fried Conjecture in small dimensions*, **Inventiones Math.** 220 (2020), 525-579
and I developped a theory of joint spectrum for the generators of an Abelian Anosov action (such as Weyl chamber flow on locally symmetric of rank > 1) :
Y. Guedes Bonthonneau, C. Guillarmou, J. Hilgert, T. Weich, *Ruelle-Taylor resonances of Anosov actions*. **Journal of the EMS**. DOI :10.4171/JEMS/1428
Y. Guedes Bonthonneau, C. Guillarmou, T. Weich, *SRB measures for Anosov actions*, **Journal of Differential Geometry**, to appear.

On geometric inverse problems, rigidity and X-ray tomography, I proved injectivity of X-ray transforms on symmetric tensors for 2D Anosov geodesic flows, the lens rigidity of negatively curved manifolds with strictly convex boundary and I solved a long standing conjecture of Burns-Katok that the marked length spectrum of negatively curved closed manifold determines the metric up to isometry when the metrics are close (this last article was the subject of a Bourbaki seminar by U. Hamenstadt in 2021). In dimension, I solved with Lefeuvre and Paternain the Burns-Katok conjecture for surfaces with Anosov flows.

C. Guillarmou, *Invariant distributions and X-ray transform for Anosov flows,* **Journal of Differential Geometry**, 105 (2017), 177-208.
C. Guillarmou, *Lens rigidity for manifolds with hyperbolic trapped set*, **Journal of AMS**, 30 (2017), 561–599.
C. Guillarmou, T. Lefeuvre, *The marked length spectrum of Anosov manifolds*, **Annals of Math** 190 (2019), no 1., 321-344.
C. Guillarmou, T. Lefeuvre, G. Paternain, *Marked length spectrum rigidity for Anosov surfaces*, **Duke Math Journal**, to appear in 2024

In conformal field theory and probability I constructed with R. Rhodes and V. Vargas the Liouville theory on genus $g > 1$ Riemann surfaces and analyzed the partition function near boundary of moduli space, in order to prove the convergence of Polyakov non-critical string theory. We also proved with A. Kupiainen the first mathematical realization of the conformal bootstrap for a non-rational CFT, the first article was selected by Quanta Magazine among the three "2021 biggest breakthrough in maths and computer sciences". The full modular bootstrap was done in two papers, one on the Riemann sphere and one for general surfaces by proving Segal's gluing axioms. In recent preprint, we also constructed a new CFT with central charge $c < 1$ and discrete spectrum called compactified imaginary Liouville and we proved the Segal axioms.
C. Guillarmou, R. Rhodes, V. Vargas, *Polyakov's formulation of 2d bosonic string theory.* **Publications mathematiques de l'IHES**, 130 (2019), 11-185.
C. Guillarmou, A. Kupiainen, R. Rhodes, V. Vargas, *Conformal bootstrap in Liouville theory*, **Acta Mathematica**, 233 (2024) (1), 33-194.

C. Guillarmou, A. Kupiainen, R. Rhodes, V. Vargas, *Segal's axioms and bootstrap for Liouville theory*, **Annals of Math**, to appear.
C. Guillarmou, A. Kupiainen, R. Rhodes, *Compactified Imaginary Liouville theory*, **Comm. AMS**, 5 (2025), 571–694.

RESEARCH MONOGRAPHS

C. Guillarmou, M. Mazzucchelli, *Introduction to Geometric Inverse Problems*, monograph to appear in Graduate Studies in Math, American Math. Soc.

INVITED PRESENTATIONS

I received more than 80 invitations to speak at international conferences in the last 10 years. This includes an invited lecture at the ICM :

2018 Invited speaker, International Congress of Mathematics, PDE section, Rio de Janeiro.

This also includes invitations to birthday/homage conferences of prominent mathematicians :

2024 Path Integral and friends, 70th birthday of Antti Kupiainen, Helsinki.
2024 Microlocal Analysis and Quantum Dynamics (in memory of Steve Zelditch), Northwestern.
2024 From Microlocal to Global Analysis, 75th birthday of Richard Melrose, MIT.
2024 Paris-Saclay conference in Analysis and PDE, 60th birthday of Maciej Zworski, Orsay
2022 Inverse problems in analysis and geometry, 70th birthday conference for Gunther Uhlmann, Helsinki.
2022 Geometric Applications of Microlocal Analysis, 60th birthday conference for Rafe Mazzeo, Stanford.
2019 Microlocal Analysis and Spectral Theory : A Conference in Honor of Richard Melrose, Berkeley.
2019 Problems in math. physics and spectral theory, 70th birthday conference of Bernard Helffer, Nantes.
2017 Conference Riemannian Geometry : Past, Present and Future : an homage to Marcel Berger, IHES.
2018 Workshop on Groups, Geometry and Dynamics, with an hommage to Riccardo Mane, Montevideo.

This includes talks in international conference in spectral, scattering and microlocal analysis, including mini-courses in summer/winter schools :

2026 Modern Applications of Microlocal Analysis, UCL London,
2023 Spectral Theory and Mathematical Relativity, ESI Vienna, Austria,
2021 Contemporary Analysis and Its Applications (ECM Satellite conference), Slovenia.
2021 Analysis on singular spaces, Banff.
2017 The Third Symposium on Scattering and Spectral Theory, Florianopolis.
2017 Microlocale analysis and applications, LMS-Clay conference, Cardiff.
2016 Journées EDP, annual conference of the GDR EDP, Roscoff.

and in conferences in mathematical physics, geometry and QFT :

2026 Workshop Random Geometry in Math and Physics, Simons Center Stony Brook

2025 Workshop Integrable QFT : conformal bootstrap, bosonization, near-critical perturbations, and Coulomb gas, Bonn

2024 Conference Itzykson, CEA Saclay.

2024 Quantum and classical fields interacting with geometry, IHP Paris

2022+2024 Quantum Fields and Probability, Mittag-Leffler Institute, Stockholm.

2019 Probability and quantum field theory : discrete models, CFT, SLE and constructive aspects, Porquerolles.

2017 The 37th winter school of geometry and physics, Srni.

2017 Workshop Teichmüller theory and geometric structures on 3-dimensional manifolds, Luxembourg.

2016 Analytical Methods in Classical and Quantum Dynamical Systems, Pisa.

ORGANIZATION OF INTERNATIONAL CONFERENCES

2025 Workshop *Intersections of Topological Recursion, Conformal Field Theory, and Random Geometry*, Diablerets, Switzerland

2024 Workshop *Conformal Field Theory and Probability*, Centre Bernoulli EPFL Lausanne, Switzerland

2022 Workshop *Probability and Conformal Field Theory*, Agay les Roches Rouges, France

2022 Global Harmonic Analysis : a conference in honor of Steve Zelditch

2021 Workshop *Ruelle-Pollicott Resonances in Dynamics and in Semi-classical Analysis*, EPFL Lausanne, Switzerland

2021 Workshop *Rigidity problems in geometry*, Roscoff, France

2021 Workshop *Ruelle resonances and hyperbolic dynamics*, Porquerolles, France

2019 Conference *Recent developments in microlocal analysis*, MSRI Berkeley, USA

2017 Summer school *Microlocal analysis and applications*, LMS-Clay conference, Cardiff, UK

2017 Workshop *Mathematical Methods in Inverse Scattering and Spectral Theory*, Leeds, UK

2015 Conference *Geometric inverse problems*, IHP Paris, France

2015 Conference *Semi-classical Analysis : Spectral Theory and Resonances*, ESI Vienna, Austria

2014 Conference *Inverse Problems*, IHP Paris, France

2013 Workshop *Quantum chaos, resonances and semi-classical measures*, Roscoff, France

MENTORING OF YOUNG RESEARCHERS

Period	Mentoring	Supervised person	Current Position
2012-2015	PhD	Yannick Bonthonneau	Researcher at CNRS
2014-2017	PhD	Charles Hadfield	Researcher for IBM USA
2017-2020	PhD	Thibault Lefeuvre	Full Professor in Univ. Paris Saclay.
2019-2022	PhD	Yann Chaubet	Assistant Professor, Univ. Nantes.
2020-2023	PhD	Baptiste Cerclé	Researcher at CNRS.
2023–	PhD	Romain Usciati	PhD, codirection with Raoul Santachiarra
2024–	PhD	Yang Xiao	PhD, codirection with Rémi Rhodes
2024 –	PhD	Tristan Humbert	PhD, codirection with Thibault Lefeuvre
2024–	PhD	Yuxiao Xie	PhD student Orsay.
2018-2020	Postdoc	Benjamin Küster Delarue	Postdoctoral researcher Univ. Paderborn
2019-2021	Posdtoc	Mihajlo Cekic	Professor Junior Chair at CNRS
2020-2022	Potsdoc	Victor Arnaiz	Assistant Professor, Univ. Bordeaux