

CURRICULUM VITAE

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Positions held

2023 - Professor, *Université d'Angers* (UA).

2007 – 2023 Professor, *Paris-Est Créteil University* (Upec).

2018 John von Neumann Visiting Professorship, *Technische Universität München* (TUM).

2013 – 2017 Deputy Director of the National Institute for Mathematical Sciences and their Interactions of the CNRS.

2008 – 2012 Head of the mathematics department at Upec.

1995 – 2007 Maître de conférences, *Cergy-Pontoise University*.

Education

2003 Habilitation, Cergy-Pontoise University.

1995 PHD, Paris-Sud University (supervisor Patrick Gérard).

1987 – 1992 École Normale Supérieure Paris.

Administration

2024 – Member of the EMS-EWM Scientific Panel,

2023 – Member of the *Conseil scientifique du CNRS*.

2022 – Member of the *Scientific Committee* of the CNRS Network Quantum Dynamics.

2019 – Member of the board of the *Fonds de dotation de l'Institut Henri Poincaré*,

2019 – 2024 Head of the *Scientific Culture Committee* of the Institut Henri Poincaré.

2020 – 2022 Member of the *Conseil de laboratoire* of the CNRS UMR 8050 (Lama).

2018 – 2023 Member of the board of the *Centre international de rencontres mathématiques* (Cirm),

2019 – 2021 Member of the board of the *Société Mathématique de France*.

Editorial boards

2024 - *Annales de la faculté des sciences de Toulouse*

2018 - *Documenta Mathematica*.

2019 - 2024 *Bulletin & Mémoires de la SMF*

Grants and awards

2022 - 2027 PI of the Connect-Talent Project

High Frequency Analysis of Schrödinger equations,

funded by Pays de la Loire Region, Angers Métropole, Université d'Angers and CNRS.

2020 – 2023 : co-PI of the project *Quantum limits for sub-elliptic operators*,

funded by the Leverhulme Trust (PI Véronique Fischer).

2019 Nominated as TUM Ambassador by the Technische Universität München.

2019 - 2020 : PI of the 80—Prime CNRS Project *Algorithms in Quantum Molecular Dynamics* webpage.

Délégations CNRS : 1 year 2001/02, 2019/20 and 2022/23, 1/2 year 2005 and 2010.

Expertise activities

Member of the *Hcéres Committee* for a Synthesis about Maths in France (2021-2022).

Expert for Foundations: *L'Oreal* (2020), *Labex Cimi* (2020), *Sephora Berribi Prize* (2019), *Initiative Paris Seine* (2019 & 2021)

Expert for national agencies: HCERES (2021), DFG (2017), EPSRC (2016),

Teaching activities during the last five years

Master and undergraduate courses for students in Mathematics at UA.

Summer School Northwestern University 2024, April 2-5, 2024.

Spring School Göttingen 2024, April 2-5, 2024.

Master class of the Centre Henri Lebesgue, université d'Angers, Dec. 19-22, 2023.

Master and undergraduate courses for students in Mathematics and Physics at Upec.

Member of the team in charge of selecting students on the *Parcours sup* platform at Upec in 2021.

Master class “Sofia Kowalevskaja lectures”, May 31 - June 2, 2021 (Angers).

PhD Supervision

2024 – Marianne Curely, with Martin Averseng.

2023 – Éric Vacelet, with Nicolas Raymond.

2022 – Lino Benedetto, with Nicolas Raymond.

2017 – 2020: Sami Siraj-Dine, with Éric Cancès and Antoine Levitt (engineer at *Citadel*).

2013 – 2016: Victor Chabu (Postdoc in Sao Paulo).

2010 – 2014: Lysianne Hari, with Thomas Duyckaerts (MCF at Besançon University).

Popularization activities during the last five years

2022— Commissaire scientifique, Palais de la découverte 2025.

2018 – 2023 Commissaire scientifique, *Maison Poincaré*, Institut Henri Poincaré.

2020 – 2023 Scientific committee of three exhibits at IHP. Edition of the catalogues.

2021 – 2022 Scientific Committee of *Il était une fois les objets* (Procidis).

2021 Organisation of an exhibit planned for 2022 between art and mathematics with

the *Galerie Wagner* (specialized in abstract painting). Realisation of the catalogue of the permanent math exhibition to be held in the IHP.

Organisation of research events and seminars on the last three years

2025 - : Organisation committee of *Quantum Dynamics 2025*, Angers, Feb. 4-6, 2025.
 2024 - : Organisation committee of ICMP 2024, Strasbourg.
 2024 - : Organisation committee of MAQD 2024, Northwestern, June 17 – 28, 2024.
 2024 - Interdisciplinary workshop *Molecular Dynamics*, Angers, Feb. 20-23.
 2023 - Workshop *High frequency analysis : from operator theory to PDE*, Angers, Aug. 28th - Sept. 2023.
 2023 - : Organisation of *La gabbare semi-classique*, bi-annual regional seminar.
 2021 Organisation committee of the conference *Analysis and PDEs* for the 60th birthday of Patrick Gérard, Orsay, June 28th. - July 2nd.

Publications of the last five years

Publications in peer-reviewed journals

- [1] Lino Benedetto, CFK, Véronique Fischer. Quantization on Groups and Garding inequality, *J. Math. Soc. Japan*, Advance Publication, 1-36, (2024).
- [2] G. Bal, S. Becker, A. Drouot, CFK, J. Lu and A. Watson. Edge state dynamics along curved interfaces, *SIAM Journal on Mathematical Analysis* 55(5):4219-4254. (2023).
- [3] R. Carles, CFK, C. Lasser. On the Cauchy problem for the Hartree approximation in quantum dynamics, *Nonlinearity*. 36(6) (2023).
- [4] CFK, S. Gamble, L. Hari. Propagation of Coherent States through Conical Intersections, *Pure and Applied Analysis*, 5(2), p. 323-376 (2023).
- [5] CFK, V. Fischer, S. Flynn. Geometric invariance of the semi-classical calculus on nilpotent graded Lie groups, *The Journal of Geometric Analysis*, 33, (2023).
- [6] V. Chabu, CFK, F. Macià. Effective mass theorems with Bloch modes crossings, *Arch. Rational Mech. Anal.* 245 p.1339–1400 (2022).
- [7] I. Burghardt, R. Carles, CFK, B. Lasorne, C. Lasser. Dynamical approximations for composite quantum systems: Assessment of error estimates for a separable ansatz, *J. Phys. A: Math. Theor.* 55 224010 (2022).
- [8] CFK, C. Letrouit. Observability and controllability for the Schroedinger equation on quotients of groups of Heisenberg type, *Journal de l'École Polytechnique, Math.*, 8, p. 1459–1513 (2021).
- [9] I. Burghardt, R. Carles, CFK, B. Lasorne and C. Lasser. Separation of scales: a quantum-classical approach for complex systems and a system-bath ansatz, *J. Phys. A: Math. Theor.* 54 414002 (2021).
- [10] E. Cancès, CFK, A. Levitt, S. Siraj-Dine. Coherent electronic transport in periodic crystals, *Ann. Henri Poincaré*, 22(8) p. 2643–2690 (2021).
- [11] CFK, C. Lasser, D. Robert. Propagation of Wave Packets for Systems Presenting Codimension One Crossings, *Communications in Mathematical Physics*, 385(3), p. 1695–1739 (2021).

- [12] CFK, V. Fischer. Quantum evolution and sub-laplacian operators on groups of Heisenberg type, *J. Spectr. Theory*, 11(3), p. 1313–1367 (2021).

Proceedings

- [55] CFK, V. Fischer, S. Flynn. Some remarks on semi-classical analysis on two-step Nilmanifolds. in "Quantum Mathematics I & II", Springer INdAM Series (vol. 57 & 58), 2023.
- [56] CFK, C. Lasser, D. Robert. Adiabatic and non-adiabatic evolution of wave packets and applications to initial value representations, in Partial Differential Equations, Spectral Theory, and Mathematical Physics. The Ari Laptev Anniversary Pavel Exner, Rupert L. Frank, Fritz Gesztesy, Helge Holden, Timo Weidl (eds.), EMS Publishing House (2021).
- [57] V. Chabu, C. Fermanian Kammerer and F. Macià. Semiclassical analysis of dispersion phenomena in *Analysis in Developing Countries*, Delgado J., Ruzhansky M. (eds), Springer Proceedings in Mathematics & Statistics, vol 275. Springer, Cham.

Preprint

- [63] CFK, C. Lasser, D. Robert. Asymptotic initial value representation of the solutions of semi-classical systems presenting smooth codimension one crossings preprint arXiv:2305.17053.
- [64] CFK, Jérôme Le Rousseau. Semi-classical analysis (review).
- [65] CFK, Véronique Fischer, Steven Flynn. A microlocal calculus on filtered manifolds, preprint arXiv:2501.14388.
- [66] Lino Benedetto, CFK, Nicolas Raymond, Éric Vachelet. The superadiabatic projectors method applied to the spectral theory of magnetic operators, preprint arXiv:2501.14388.

Invitations in the last five years

Collaboration visits

- Politecnico Milano, October 28 - November 1, 2024
- Polytechnic University of Madrid, December 3-8, 2023
- Technische Universität München, May 8-12, 2023
- Invitation to the Program "Spectral Theory and Mathematical Relativity", Erwin Schrödinger Institut, Vienna, June 2023 (two weeks - talk).
- University of Bath, Feb. 22-24 2023.
- Polytechnic University of Madrid, December 2022
- University of Bath, April. 5-9 2022.

Invited conferences

- Invitation and talk at "Hypoellipticity in Lund 2025", Lund University, June 23-27, 2025.
- Invitation and talk at "Analysis and PDEs 2024", Leibniz University Hannover, Sep 30 - Oct. 2, 2024.
- Invitation and talk at "Journées du gdr afhp" Oct. 25-27, 2023
- Invitation and talk at "Numerical and theoretical advances in quantum mechanics", Toulouse, January 16-20, 2023.

- Invitation and talk at the Colloque tuniso-français d'Équations aux dérivées partielles, Hammamet, October 10-14, 2022.
- Invitation and talk at "At the Interface between Semiclassical Analysis and Numerical Analysis of Wave Scattering Problems", Oberwolfach, September 26-30, 2022.
- Symposium of the conference High Frequency Scattering and Wave Propagation: the Semiclassical/Numerical Analysis Interface at the Mathematics of Wave Phenomena, Feb.14-18 2022.
- Conference for the 150 years of the SMF, March 16-18 2022.
- "Watching chemistry happen", Lorentz center, June 13-15, 2021 (on line).
- Journées EDP, Obernai June 7-11 juin 2021.
- "Spectral theory and geometry", Chales, Sept 28 - Oct 2, 2020.
- "Semi-classical analysis meets Numerical analysis (SCA mets NA)", Bath, June 14-18, 2021 (cancelled).
- "Solid Math 2020", Marne-la-Vallée on July 1-3, 2020 - cancelled, postponed to August 25-27 2021.
- "On nonlinear PDEs: from physical to abstract framework", Institut Mittag-Leffler, June 22-26, 2020 - cancelled, postponed to 2022.
- "Journées EDP", Obernai on June 8-12, 2020 - cancelled, postponed to June 7-11, 2021.
- "Multi-scale Problems in Mathematical Physics", Angers, May 11-15, 2020 - cancelled, postponed to June 14-18 2021.

Other seminars and talks

- Séminaire du Laboratoire Jacques-Louis Lions (Paris), Jv. 17, 2025
- Colloquium Université de Bretagne Occidentale (Brest), Nov 4, 2024
- Colloquium Université Rennes 1, 28 mai, 2024
- Séminaire Université de Toulon, 20 mars 2024
- Exposé Université Paris-Saclay, Séminaire d'EDP, 11 janvier 2024
- Colloquium, Université de Lorraine, Oct. 17th, 2023
- Séminaire EDP, université de Lorraine, Oct. 17th, 2023
- Groupe de travail Physique Mathématique, Oct 12th, Larema, Angers
- Séminaire "Gabare semi-classique", Angers, Nov 10, 2023
- Colloquium, Université de Lorraine, Oct. 17th, 2023
- Séminaire EDP, université de Lorraine, Oct. 17th, 2023
- Groupe de travail Physique Mathématique, Oct 12th, Larema, Angers
- Journées Maths-Entreprise, université d'Angers, Oct. 5th, 2023
- Séminaire d'EDP, Université de Nantes, Sept. 18th, 2023
- Séminaire de l'équipe de chimie théorique MSME, Marne-la-Vallée, July 4th, 2023
- Colloquium TU München - LMU, zoom with Tübingen, May 9th, 2023
- Analysis Seminar, University of Bath, February 23rd, 2023
- Séminaire EMC2, Sorbonne Université, Paris, February 10th, 2023
- Analysis seminar, Reims, November 25th 2022.
- Mathematical Physics seminar, Grenoble, November 28th, 2022.
- Seed Seminar, January 18th, 2022.
- PDE's seminar, Nice, March 24th, 2022.
- Séminaire d'analyse, Bordeaux, February 9th, 2021 (visio).