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

2025 - *Annales scientifiques de l'École Normale Supérieure*
2018 - *Documenta Mathematica*.
2024 - 2025 *Annales de la faculté des sciences de Toulouse*
2019 - 2024 *Bulletin & Mémoires de la SMF*

Grants and awards

2026 - 2030 PI of the ANR Project *La Gabare semiclassique*.
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 Kowalevskaïa lectures", May 31 - June 2, 2021 (Angers).

PhD Supervision

2024 – Marianne Curely, with Martin Averseng.
2023 – 2026 Éric Vacelet, with Nicolas Raymond.
2022 – 2025 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

2025 - Conference at the Musée des Beaux-Arts d'Angers,
Échappées inattendues du CNRS, Nov. 14th, 2025.
2025 *5 minutes Lebesgue* (lien web)
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 paining). 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 Scientific committee of the conf. in honor of J. Nourrigat, Reims, Nov. 5-7, 2025.
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, Northwesrern, 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 gabarre 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

Publications in peer-reviewed journals

[1] CFK, Véronique Fischer, Steven Flynn. A microlocal calculus on filtered manifolds, to appear in *Memoirs of the European Mathematical Society*, preprint arXiv:2501.14388.
[2] Lino Benedetto, CFK, Nicolas Raymond, Éric Vacelet. The superadiabatic projectors method applied to the spectral theory of magnetic operators, to appear in *Review of Mathematical Physics*, preprint arXiv:2501.14388.
[3] Lino Benedetto, CFK, Véronique Fischer. Quantization on Groups and Garding inequality, *J. Math. Soc. Japan*, Advance Publication, 1-36 (2024).
[4] 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).
[5] R. Carles, CFK, C. Lasser. On the Cauchy problem for the Hartree approximation in quantum dynamics, *Nonlinearity*. 36(6) (2023).
[6] CFK, S. Gamble, L. Hari. Propagation of Coherent States through Conical Intersections, *Pure and Applied Analysis*, 5(2), p. 323-376 (2023).
[7] CFK, V. Fischer, S. Flynn. Geometric invariance of the semi-classical calculus on nilpotent graded Lie groups, *The Journal of Geometric Analysis*, 33, (2023).
[8] V. Chabu, CFK, F. Macià. Effective mass theorems with Bloch modes crossings, *Arch. Rational Mech. Anal.* 245 p.1339–1400 (2022).
[9] 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).

[10] 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).
[11] 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).
[12] E. Cancès, CFK, A. Levitt, S. Siraj-Dine. Coherent electronic transport in periodic crystals, *Ann. Henri Poincaré*, 22(8) p. 2643–2690 (2021).
[13] 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).
[14] CFK, V. Fischer. Quantum evolution and sub-laplacian operators on groups of Heisenberg type, *J. Spectr. Theory*, 11(3), p. 1313–1367 (2021).
[15] CFK, A. Joye. Nonlinear quantum adiabatic, *Nonlinearity*, 33(9), p. 4715–4751 (2020).
[16] V. Chabu, CFK, F. Macia. Wigner measures and effective mass theorems, *Annales Henri Lebesgue*, 3, p.1049–1089 (2020).
[17] CFK, V. Fischer. Defect measures on graded Lie groups, *Ann. Sc. Norm. Super. Pisa Cl. Sci.*, 21(5), p. 207– 291 (2020).
[18] CFK, V. Fischer. Semi-classical analysis on H-type groups, Sci. China Math. 62 (2019), p. 1057-108
[19] CFK, C. Lasser. An Egorov Theorem for avoided crossings of eigenvalue surfaces, Comm. in Math. Physics, 353 (2017), p. 1011-1057.
[20] CFK, F. Méhats: A kinetic model for the transport of electrons in a graphen layer, *Journal of Computational Physics* 327 (2016).
[21] H. Bahouri, CFK, I. Gallagher: Dispersive estimates for the Schrödinger operator on step 2 stratified Lie Groups, *Analysis and PDEs*, 9 (2016), no. 3, p. 545-574.
[22] N. Anantharaman, CFK, F. Macià: Long-time dynamics of completely integrable Schrodinger flows on the torus, *Amer. J. Math.* 137 (2015), no. 3, p. 577-638.
[23] A. Atallah, CFK: Microlocal defect measures for a degenerate thermoelasticity systems, *Journal of the Institute of Mathematics of Jussieu*, 13 (2014), p. 145-181.
[24] CFK, P. Gérard, C. Lasser: Wigner measure propagation and Lipschitz conical singularity for general initial data, *Arch. Ration. Mech. Anal.* 209 (2013), 1, p. 209-236.
[25] R. Carles, CFK: A nonlinear Landau-Zener formula, *J. Stat. Phys.* 152 (2013), 4, p. 619-656.
[26] H. Bahouri, CFK, I. Gallagher: Refined Inequalities on Graded Lie Groups. *C. R. Acad. Sci. Paris.* 350, Série 1, p. 393-397 (2012).
[27] CFK, C. Lasser: Single switch surface hopping for molecular dynamics. *J Math. Chem.* (2012) 50: 620–635.
[28] H. Bahouri, CFK, I. Gallagher: Phase space analysis on the Heisenberg group. *Astérisque*, 345 (2012).
[29] R. Carles, CFK: A Nonlinear Adiabatic Theorem for Coherent States. *Nonlinearity*, 24 (2011) p. 1-22.
[30] R. Carles, CFK: Nonlinear coherent states and Ehrenfest time for Schrodinger equation. *Comm. Math. Phys.*, 301, 2 (2011), p. 443-471.
[31] CFK, V. Rousse: Semi-classical analysis of a conjoint crossing of three symmetric modes. *Methods Appl. Anal.*, 17, 2 (2010), p. 137–163.
[32] T. Duyckaerts, T. Jecko, CFK: Degenerated codimension 1 crossings and resolvent estimates, *Asympt. Analysis*, 3-4, p. 147-174 (2009) .
[33] R. Carles, CFK, N. Mauser, H.-P. Stimming: On the time evolution of Wigner measures for Schrödinger equations. CPAA, 8, 2, p. 559-585 (2009).

[34] CFK, C. Lasser: Propagation through generic level crossings: a surface hopping semigroup. SIAM J. of Math. Anal., 140, 1, p. 103-133 (2008).
[35] CFK, C. Lasser: Single switch surface hopping for molecular dynamics with transitions. Journal of Chemical Physics, 128, 144102 (2008).
[36] CFK, V. Rousse: Resolvant estimates for a Schrödinger operator with matrix-valued potential presenting eigenvalue crossings. Application to Strichartz estimates, *Comm. in Part. Diff. Eq.* 33, 1, p. 19-44 (2008).
[37] CFK: Normal forms for conical intersections in quantum chemistry, *Math. Phys. Elect. Jour.*, 13, N° 4 (2007).
[38] C. Fermanian Kammerer: Semiclassical analysis of generic codimension 3 crossings. *Int. Math. Res. Not.* 45, p.2391-2435 (2004).
[39] A. Atallah-Baraket, CFK : High frequency analysis of solutions to the equation of viscoelasticity of Kelvin-Voigt. *J. Hyperbolic. Differ. Equ.* 1, 4, p.789-812 (2004).
[40] C. Fermanian Kammerer: A non commutative Landau-Zener formula, *Math. Nach.* 271, p. 22-50 (2004).
[41] C. Fermanian Kammerer: Semi-classical analysis of a Dirac equation without adiabatic decoupling, *Monat. fur Math.* 142, 4, p. 281-313 (2004).
[42] C. Fermanian Kammerer, P. Gérard: A Landau-Zener formula for non-degenerated involutive codimension three crossings, *Ann. Henri Poincaré*, 4, p. 513-552 (2003).
[43] C. Fermanian Kammerer: Wigner measures and molecular propagation through generic energy level crossings, *Reviews in Mathematical Physics*, 15, p. 1285-1317 (2003).
[44] R. Carles, C. Fermanian Kammerer, I. Gallagher: On the role of quadratic oscillations in non linear Schrödinger equation. *J.F.A.*, 203, 2, p.453-493 (2003).
[45] C. Fermanian Kammerer, C. Lasser: Wigner measures and codimension two crossings. *Jour. Math. Phys.* 44, 2, p. 507-527 (2003).
[46] CFK, P. Gérard: Mesures semi-classiques et croisements de modes. *Bull. Soc. math. France*, 130, 1, p. 145-190 (2002).
[47] CFK: Propagation of concentration effects near shock hypersurfaces for the heat equation. *Asymptotic Analysis*, 24, p. 107-141 (2000).
[48] CFK, F. Merle, H. Zaag: Stability of the blow-up profile of non-linear heat equations from the dynamical system point of view. *Math. Ann.* 317, p. 347-387 (2000).
[49] CFK, H. Zaag: Boundedness till blow-up of the difference of two given solutions of non linear heat equation. *Nonlinearity*, 13, p. 1189-1216 (2000).

Notes aux Comptes-Rendus de l'Académie des Sciences

[50] H. Bahouri, I. Gallagher, CFK: Analyse de l'espace des phases et calcul pseudodifférentiel sur le groupe de Heisenberg. *C. R. Acad. Sci. Paris.* 347, Série 1, p. 1021-1024 (2009).
[51] CFK: Analyse à deux échelles d'une suite bornée de L^2 sur une sous-variété du cotangent. *C. R. Acad. Sci. Paris.* 340, Série 1, p. 269-274 (2005).
[52] CFK, P. Gérard: Une formule de Landau-Zener pour un croisement non dégénéré et involutif de codimension 3. *C. R. Acad. Sci. Paris.* 335, Série 1, p. 915-920 (2002).
[53] CFK: Mesures semi–classiques deux–microlocales, *C. R. Acad. Sci. Paris,* 331, Série 1, p. 515-518 (2000).

Books or chapter of books

[54] CFK, Jérôme Le Rousseau: Semi-classical analysis, *Encyclopedia of Mathematical Physics (second edition),* Vol. 5 (analysis), Academic Press, 2025, pp. 47–64.
[55] N. Anantharaman, F. Faure, CFK: Le chaos quantique. Actes des journées X-UPS 2014, Éditions de l'Ecole Polytechnique.
[56] R. Carles, CFK: A Nonlinear Adiabatic Theorem for Coherent States. In *Microlocal methods in mathematical physic and global analysis*, D. Grieser, S. Teufel, A. Vasy (eds.), Trends in Mathematics, Birkhäuser (2013).
[57] CFK, P. Gérard: Two scale Wigner measures and the Landau-Zener formulas. *Multiscale Methods in Quantum Mechanics*, 59–68, Trends Math., Birkhäuser Boston, Boston, MA, 2004.
[58] CFK P. Gérard. Landau-Zener formula for semi-classical measures. Dispersive Transport Equations and Multiscale Models, *The IMA Volumes in Mathematics and its Applications*, vol.136, N. BenAbdallah, A. Arnold, P. Degond, I. Gamba, R.T. Glas- sey, C.D. Levermore, Springer, p. 167-178, 2004.

Proceedings

[59] 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.
[60] 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).
[61] 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.
[62] CFK: Propagation des mesures de Wigner à travers un croisement de codimension 1 dégénéré. Séminaire Equations aux Dérivées Partielles 2008–2009, Mai 2009, Ecole Polytechnique.
[63] CFK, C. Lasser: An algorithme for quantum propagation through electron level crossings. Exposé au colloque EDP de Forges-les-Eaux, juin 2005.
[64] CFK, P. Gérard: Une formule de Landau-Zener pour un croisement générique de codimension 2. Séminaire Equations aux Dérivées Partielles 2001–2002, Exposé N^{o}21, Ecole Polytechnique.
[65] CFK, P. Gérard: Mesures semi-classiques et croisements de modes. Séminaire Equations aux Dérivées Partielles 1999–2000, Exposé N^{o}21, Ecole Polytechnique.

Preprint

[66] 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.
[67] M. Falconi, Raphaël Gautiern CFK. Measuring a quantum system without problems, preprint arXiv:2606.21211
[68] CFK, N. Frantz. Edge modes generated by intersection between 3 energy bands, preprint arXiv:2606.16419

Invitations in the last five years

Collaboration visits
- Politectnico 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
- Talk at the meeting of the ANR Opart, St.-Dié des Vosges, May 26-28, 2026.
- Talk at the conference "Modern Applications of Microlocal Analysis", University College London, February 16–20, 2026.
- Talk at the conference "High energy spectral theory: geometry and dynamics", Newton Institute, Cambridge, January 12-16, 2026.
- Talk at the "Journées de la Fédération Henri Lebesgue", November, 12-13 2025.
- 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.

Other seminars and talks
- On line seminar Milano-München, March 25, 2026.
- 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.