

Curriculum vitae of Annalisa Panati

General informations

Name : Panati Prénom : Annalisa
Nationality : Italian
Date of Birth : 13/04/1980
Current position : Maître de Conférences (Hors Classe since 2022)
Languages : italian (native speaker), french (fluent), english (fluent), spanish

Adresses : Teaching institute :
Département de Mathématiques
UTLN (Université de Toulon)
Avenue de l'Université, BP 20132
83957 La Garde Cedex, France

Research institute :
Centre de Physique Théorique, UMR 7332,
Luminy case 907,
13288 Marseille Cedex 09, France

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Positions

2022-now Maître de Conference Hors Classe (Associate Professor), Université de Toulon et Centre de Physique Théorique, Luminy, Marseille

2021 CRM-Simons Visiting professor at CRM, Université de Montréal (6 months)

2012-2016 Visiting professor, McGill University, Montréal (of which CNRS research leave (délégation) at Mixed International Unit for one year)

2009- to now Maître de Conference, Université de Toulon et Centre de Physique Théorique, Luminy, Marseille

2008-09 ATER (Teaching assistant) at Université de Paris Sud (Orsay)

2004-07 Allocataire de recherche (Research fellow) at Université de Paris Sud (Orsay)

Education

- 2008 PhD in Mathematics at University Paris Sud under the supervision of Christian Gérard. Thesis title : "Spectral Analysis of a class of Hamiltonians in Quantum Field Theory"
- 2004 DEA en Mathématiques Pures (Advanced Master degree in Pure Mathematics) - Université de Paris Sud (Orsay)
- 2003 Laurea in Matematica (Master degree), Università degli Studi di Milano with top marks
- 2002-03 Stay at ENS Cachan with Erasmus project
- 1998 Scientific high school degree with top marks, Liceo Scientifico Fracastoro, Verona

Articles

- (17) T. Benoist, L.Bruneau, V. Jakšić, A. Panati, C.-A. Pillet : Entropic Fluctuations in Statistical Mechanics II. Quantum Dynamical Systems, accepted in Comm.Math.Phys. <https://arxiv.org/abs/2409.15485>
- (16) T. Benoist, L.Bruneau, V. Jakšić, A. Panati, C.-A. Pillet : On thermodynamic limit of two-times measurement entropy production, invited paper for special issue in memory of Huzihiro Araki, Review in Mathematical Physics, Online Ready (2024) <https://arxiv.org/abs/2402.09380>
- (15) T. Benoist, L.Bruneau, V. Jakšić, A. Panati, C.-A. Pillet A note on two-times measurement entropy production and modular theory, Letters in Mathematical Physics Volume 114, article number 32, (2024) <https://link.springer.com/article/10.1007/s11005-024-01777-0>
- (14) T. Benoist, A. Panati, Y.Pautrat : Heat conservation for open quantum systems in the two-time measurement framework, Journal of Statistical Physics, Volume 178, 893-925 (2020)
- (13) T. Benoist, A. Panati, R.Raqué pas : Control of fluctuations and heavy tails for heat variation in the two-time measurement framework, Ann. Henri Poincaré 20, 631 :674 (2019) <http://link.springer.com/article/10.1007/s00023-018-0743-x>
- (12) B.Landon, J.Panangaden, A. Panati, J. Zwicker : A Note on the notion of reflectionless for one-dimensional Schrödinger Operators, Ann.Henri Poincaré , June 2017, Volume 18, Issue 6, (2017) 2075-2085 <https://link.springer.com/article/10.1007/s00023-016-0543-0>

- (11) T. Benoist, V. Jakšić, A. Panati, Y. Pautrat, C.-A. Pillet : Full statistics of energy conservation in two-time measurement protocols, *Physical Review E : Statistical, Nonlinear, and Soft Matter Physics*, American Physical Society, (2015), 92 (3), pp.032115.
<http://arxiv.org/abs/1503.07333>
- (10) V. Jakšić, J. Panangaden, A. Panati, C.-A. Pillet : Energy conservation, counting statistics, and return to equilibrium, *Lett. Math. Phys.* 105, Issue 7 (2015), 917-938
<http://arxiv.org/abs/1409.8610>
- (9) V. Jakšić, B. Landon, A. Panati : A note on reflectionless Jacobi matrices, *Comm. Math. Phys.* 332, Issue 2 (2014) 827-838 <http://arxiv.org/abs/1308.1980>
- (8) C. Gérard, F. Hiroshima, A. Panati, A. Suzuki : Removal of the UV cutoff for the Nelson model with variable coefficients, in *Lett. Math. Phys.* 101 : 305-322 (2012) <http://arxiv.org/abs/1107.3815>
- (7) C. Gérard, F. Hiroshima, A. Panati, A. Suzuki : Absence of ground state for the Nelson model on static space-times, *J. Funct. Analysis* 262 : 273-299 (2012) <http://arxiv.org/abs/1012.2655>
- (6) C. Gérard, F. Hiroshima, A. Panati, A. Suzuki : Infrared problem for the Nelson model on static space-times, *Comm. Math. Phys.* 308, 543-566 (2011) <http://arxiv.org/abs/1004.5204>
- (5) C. Gérard, F. Hiroshima, A. Panati, A. Suzuki : Infrared divergence of a scalar quantum field model on a pseudo Riemannian manifold, *Interdiscip. Inform. Sci.* 15 (2009), 399-421 <http://arxiv.org/abs/0904.2805>
- (4) C. Gérard, F. Hiroshima, A. Panati, A. Suzuki : Existence and absence of ground states for a particle interacting through the quantized scalar field on a static spacetime, *RIMS, Kokyuro Bessatu B21* (2010)
- (3) C. Gérard, A. Panati : Spectral and scattering theory for space-cutoff $P(\varphi)_2$ models with variable metric, *Ann. Henri Poincaré* 9 :1575-1629, (2008) <http://arxiv.org/abs/0806.4377>
- (2) C. Gérard, A. Panati : Spectral and scattering theory for a class of abstract bosonic QFT models, *Rev. Math. Phys.* 21 :373-437, (2009)

<http://arxiv.org/abs/0806.4597>

- (1) A. Panati, Existence and non existence of a ground state for the massless Nelson model under binding condition, Report on Math.Phys, 63,3 : 305-330, (2009) <http://arxiv.org/abs/math-ph/0609065>

Proceedings

- (18) A. Panati, On the Nature of Energy Full Statistics : fluctuations' control and heavy-tailed distributions and ultraviolet regularization, Oberwolfach Reports 41 (13-16) (2017), Workshop "Mathematical Questions and Challenges in Quantum Electrodynamics and its Applications"
- (19) A. Panati, Energy conservation and fluctuation relations for open quantum systems, Oberwolfach Reports 43, 2504-2505 (2016), Workshop "Many-Body Quantum Systems and Effective Theories"

Preprints

- (20) T. Benoist, L. Bruneau, V. Jakšić, A. Panati, C.-A. Pillet : Entropic Fluctuation Theorems for Spin-Fermion Model, submitted
<https://arxiv.org/abs/2411.14841>

Awards

2012-2016 Prime d'excellence scientifique (Award for excellent scientific work by Conseil National des Universités)

Grants and Networks

- 2024-2027 membre du projet ANR DYNACQUS : Large-time Dynamics of Classical and Quantum Systems
- 2023-2027 membre du projet ENIC (Entropy, information and control of complex processes) (CY Initiative project funded by Investissements d'Avenir ANR-16-IDEX-0008)
<https://shirikyan.u-cergy.fr/enic.html>
- 2017-2022 Grant ANR NONSTOPS : Non-equilibrium Stochastic and Open Systems
<http://pillet.univ-tln.fr/nonstops.html>
- 2013- 2016 Grant ANR SQFT : Spectral and scattering theories of QFT models

www.math.u-bordeaux1.fr/~jefaupin/anr_presentation.html

2009-2020 Member of GDR (Groupement de Recherche) "Quantum Dynamics"

<http://www.math.sciences.univ-nantes.fr/dynqua/Accueil>

Long term visits abroad

From 2012 to 2016, I obtained a visting professor position at McGill University, Montreal. I first obtained a research leave (délégation) from CNRS with affiliation to International Mixed Unit in Montreal, followed by a three years leave (détachement).

From september 2018 to 2019, I first obtained a research leave (délégation) from CNRS with affiliation to International Mixte Unit in Montreal, and I was invited to the thematic semester at Centre de Recherche Mathématique (CRM) in Montreal :

<http://www.crm.umontreal.ca/Quantique2018/index.php/>.

I obtained a Simons-CRM Professorship (founded by Simons Foundation) to visit CRM in 2021 for a 6-month period.

Advisory

2021- co-advisor for Jérémie Roualt **PhD thesis** (with Claude-Alain Pillet)

2020-21 co-advisor Jérémie Roualt master thesis (avec Claude-Alain Pillet)

In the period 2012 to 2016, as visting professor to McGill, I had the possibility to supervise students in the excellence program "Mathematics and Physics Honors Program".

Undergraduate project spanned over 3 month period while master projects over a year. All master project lead to a research publication.

2015-16 advisor for Jane Panangaden master thesis (formally co-supervised with V. Jakšić) graduated august 2016

2014-15 advisor for Justine Zwicker master thesis (formally co-supervised with V. Jakšić) graduated august 2015

2014-15 advisor for Jane Panangaden undergraduate project, (1st prize "Faculty's Undergraduate Research Conference in Computational and Mathematical Sciences")

2013 co-advisor with V. Jakšić of Jane Panangaden, Sherry Chu, Justine Zwicker summer project, , McGill University

Talks

All talks are *invited*, unless explicitly mentioned otherwise.

February 2025 Novembre 2024 One World Seminar of IAMP (International Association of Mathematical Physics) online Recording Available :

https://www.youtube.com/watch?v=XHqVop4v6Lw&ab_channel=IAMPSeminars

August 2024 Università Ca' Foscari, Venice, International congress Quantissima in the serenissima

January 2024 CY AS, Neville-sur-Oise, Minicourse at International conference "Quantum Qynamics" , 16th GdR DynQua

June 2023 CY AS, Neville-sur-Oise, International conference "Frontiers in Mathematical Physics"

April 2023 McGill University, Analysis Seminar

January 2023 Université de Toulouse, Mathematical Physics Seminar

August 2022 Università Ca' Foscari, Venice, International congress Quantissima in the serenissima

October 2021 Université de Toulouse, Fall school on Quantum Trajectories and related topics

February 2021 Perimeter Institute, Waterloo, Canada, Women at the Intersection of Mathematics and Theoretical Physics (online)

July 2020 Institut-Mittag Leffler, Sweden (online due to Covid-19) Scattering, microlocal analysis and renormalisation

October 2020 Université de Metz, France, Mathematical Physics Seminar

August 2019 Palazzo Pesaro-Papafava, Venice, (organized by Warwick University, United Kingdom), international conference "Quantissima in the Serenissima III"

July 2019 Academy of Science, Belgrade, Workshop "Mathematical Physics Week",

June 2019 Università di Padova, Padova, Italie, Mathematical Physics Seminar

February 2019 Università de Bologna, Italie, Mathematical Physics Seminar

September 2018 Centre de Recherche en Mathématique, UdeM, Montréal, Workshop Many-Body Quantum Mechanics, part of thematic semester "Mathematical challenges in Many-Body Physics and Quantum information" www.crm.umontreal.ca/Quantique2018/index.php/

August 2018 McGill University, Montreal Workshop Solid Math 2018, satellite conference of ICMP

July 2018 ICMP, International Congress in Mathematical Physics, Montréal, *contributed talk*

April 2018 Université de Toulon, France, Congress "Semi-classical analysis

and geometric asymptotics in mathematical physics"

February 2018 Winter school "Mathematical Challenges in Quantum Mechanics", Università La Sapienza, Rome, Italie, *contributed talk*

February 2018 Institut Fourier, Grenoble, France, Mathematical Physics Seminar

September 2017 Workshop "Mathematical Questions and Challenges in Quantum Electrodynamics and its Applications", MFO Oberwolfach, Allemagne

August 2017 Palazzo Pesaro-Papafava , Venezia (organized by Warwick University, United Kingdom), International congress "Quantissima in the Serenissima II"

September 2016 Workshop 'Many-Body Quantum Systems and Effective Theories', MFO Oberwolfach, Allemagne

June 2016 : 44th Canadian Annual Symposium on Operator Algebras and their Applications (COSy), CRM Montréal, Montréal, Canada

May 2016 : Aalborg University, Denmark, Workshop Solid Math 2016

April 2016 : Università of Bologna, Italy, Mathematical Physics Seminar

April 2016 : University of Stuttgart, Germany, Mathematical Physics Seminar Allemagne

December 2015 Canadian Mathematical Society Winter Meeting (Operator Algebra session)

February 2015 Nagano University, Nagano, Japan, Mathematical Physics Seminar

February 2015 McGill University, Montreal, Canada, Analysis Seminar

November 2014 McGill, Montreal, Canada, Spectral Geometry Seminar

June 2014 Centre International de Rencontres Mathématiques (CIRM), Luminy, France, International Conference " Spectral Days"

Mars 2014 University of Arizona, Tucson, Arizona, USA, Colloquium

November 2013 UdeM, Montreal, Canada, Montreal Analysis Seminar

July 2013 Autrans, France, Summer School "Advances in Quantum Open Systems"

June 2013 Institut Henri Poincaré (IHP), Paris, Seminar Paris-Londres

June 2013 Université Bordeaux I, France, Workshop Spectral and scattering theories in QFT

April 2013 University of Virginia, Virginia, USA, Mathematical Physics seminar

April 2013 Virginia Commonwealth University, Virginia, USA, Analysis Logic and Physics Seminar

January 2013 UBC Vancouver, Vancouver, Canada, Diff. Geom, Math.

Phys. and PDE seminar

April 2012 ETH, Zürich, Swizerland, Mathematical Physics Seminar

April 2012 Univerisité Paris 7, France, Working Group "Renormalisation"

Mars 2012 L'Aquila (Italie), Workshop "Meccanica Quantistica e Dintorni" (Quantum Mechanics and Beyond), *contributed talk*

July 2011 CRM, Université de Montréal, Canada, Summer school "Non-Equilibrium Statistical Mechanics"

February 2011 Bressanone (Italie) , 4th Workshop "Mathematical Methods in Quantum Mechanics", *contributed talk*

December 2010 CMAP, Ecole Polytechnique, France, Workshop "Mathematical models in Quantum Field Theory"

September 2010 Hradec Kralove (Czech Republic), QMath11, *contributed talk*

May 2010 Université de Grenoble, France, Séminaire de Physique Mathématique

April 2010 Centre de Physique Théorique, Marseille, France, Journée du laboratoire (Institut Day)

September 2009 Institut de Physique Nucléaire de Lyon, France, Meeting of "GDR Dynamique Quantique"

April 2009 Université Bordeaux I, France, Workshop "Mathematical aspects of Quantum Field Theory"

February 2009 Centre de Physique Théorique, Marseille, France Quantum and Classical Dynamics Seminar

February 2009 Univeristé de Reims, France, Patial Differential Equations and Mathematical Physics Seminar

February 2009 Bressanone (Italie) , 3th Workshop "Mathematical Methods in Quantum Mechanics", *contributed talk*

January 2009 Johannes Gutemberg University, Mainz, Germany, Differential equation group Seminary

November 2008 Insitut Henri Poincaré, Paris, France, Seminaire tournant (Paris Seminar in Mathematical Physiscs)

November 2008 Univerisité de Rennes, France, Analysis Seminar

September 2008 Aarhus Unversity, Denmark, Analysis Seminar

July 2008 Erwin Schroedinger Institut, Wien, Austria, Summerschool "Current topics in Mathematical Physics ", *contributed talk*

June 2008 Université Paris Sud, France, Working Seminar "Spectral Problems in Mathematical Physics"

October 2007 Université de Paris Sud, France, Journée de rentrée de l'équipe ANEDP

June 2007 Université de Cergy-Pontoise, France, Working Seminar in Mathematical Physics

April 2007 Université de Bordeaux I, France, Mathematical Physics Seminar

February 2007 Bressanone, Italie, Workshop "Mathematical Methods in Quantum Mechanics", *contributed talk*

September 2006 Université Paris Sud, France, Working Seminar "Spectral Problems in Mathematical Physics"

July 2006 Erwin Schroedinger Institut, Wien, Austria Workshop "Complex quantum and classical system and effective equation", *contributed talk*

February 2006 Erwin Schroedinger Institut, Wien, Austria, meeting of the European network, *contributed talk* "Analysis and Quantum"

Teaching experience and teaching responsibilities

2020-present director of studies (responsable pédagogique) for 1st-year in Mathematics program

2017-present Université de Toulon, Graduate course Spectral Analysis (Master in Mathematics), Analysis (L1 Math), Analysis 2 (L1 Engineering and Physics-Chemistry), Analysis 2 Math, Linear Algebra (Physics-Chemistry)

2016-17 Université de Toulon, Graduate course Spectral Analysis (Master in Mathematics), Analysis (L1 Math), Analysis 1 (L1 Engineering and Biology), Analysis 2 Math, Linear Algebra (Physics-Chemistry)

2015-16 McGill University, Advanced Real Analysis I (graduate) and Advanced Real Calculus (undergraduate course)

2014-15 McGill University, Advanced Real Analysis I and II (Advance Graduate courses)

2013-14 McGill University, Operator Algebras and Quantum Statistical Mechanics (Math740 graduate course), Analysis II (Math243 undergraduate)

2010-13 Université de Toulon, Course Analysis (L1 Math), Analysis (L1,L2 Info), Linear Algebra (L1 Math), EDP et Mécanique Quantique (M1 Math-graduate course)

2009-10 Université de Toulon, Analysis (L1,L2 Info), Linear Algebra (L1 Math), EDP et Quantum Mechanics (M1 Math-graduate course)

2007-09 Université Paris Sud (Orsay), Analysis (L1 Math), Linear Algebra (L1 Math)e

2007 Université Pierre et Marie Curie, Analysis (L1 Math), Linear Algebra (L1 Math)

Organization of seminars and conferences

- 2022 (with V. Jakšić, C.A. Pillet, A. Shyrikian) principal co-organizer of international conference Beyond Gibssianity, Toulon, France, 14 - 17 , june 2022
- 2019 (with J.M. Barbaroux, Univ.Toulon, Heinz Sidentop, LMU München) co-organizer of international conference at CIRM, 21 - 25 October 2019, *The Analysis of Complex Quantum Systems : Large Coulomb Systems and Related Matters*
<https://conferences.cirm-math.fr/2066.html>
- 2012-16 (with V. Jakšić) co-organizer of "Working seminar in Mathematical Physics ", McGill University
<http://www.math.mcgill.ca/jaksic/wsm2015-2016.html>
- 2014 (with V. Jakšić, R.Seiringer, A.Shyrikian) co-organizer of the two-month program "Current topics in mathematical physics"
www.math.mcgill.ca/jaksic/SUMMER2014.html
- 2012 running student seminar on "Algebras of Operators"
- 2009-12 (with C.Negulescu) co-organizer of thematic days Athena- FRU-MAM
- 2009-12 ; 2018- present organizer of "Seminaire de Dynamique Quantique et Classique", Centre de Physique Théorique, Marseille
- 2007-09 organizer of "Groupe de Travail Problèmes Spectraux en Physique Mathématique", Université Paris Sud

Services

- Referee for the journals : Comm. Math.Phys, Rev. Math. Phys., Lett. Math. Phys., Jour. Funct. Analysis

PhD defense's committees

- Member of PhD committee for Antoine Soulas, Université de Rennes, (supervised by : Dimitri Petris)
- Member of PhD committee for Maissa Hammami, Université de Toulon et Sfax (co-tutelle), May 2021 (supervised by : Claude-Alain Pillet and Mondher Damak)
- Member of PhD committee for François Bougron, Université de Cergy-Pontoise, mars 2021(supervised by : Laurent Bruneau)
- Member of PhD committee for Michel Hartig, Université de Toulon, June 2019 (supervised by : J.M.Barbaroux)
- Member of PhD committe for Benjamin Alvarez, Université de Lorraine, October 2019 (supervised by : J.Faupin)
- Member of PhD committee for Mohamed Moumadine, Université de Tou-

lon, June 2019 (supervised by : J.Asch)

Hiring committees

- Member of hiring committee for Maître de Conférences position MCF-499, Université Toulouse 3 (2024)
- Member of hiring committee for a tenure-track associate professor position(RTDb), Politecnico di Milano, Milan, Italy (2022)
- Member of hiring committee for Maître de Conférences position MCF-499, Université Grenoble Alpes (2022)
- Member of hiring committee for MCF-0830766G-4206, Université de Toulon (2021)
- Member of hiring committee for MCF-0830766G-4206, Université de Toulon (2021)
- Member of hiring committee for MCF 1668, IUT Université de la Méditerranée Aix-Marseille II (2010)

Responsabilities

- elected member of Centre de Physique Théorique, Luminy, UMR 7332
- since 2023 elected member of Administration Board, University of Toulon

Popularization of science and other writings

- (2024) collaboration to writing booklet and promotional video of art and mathematics exposition "Génération intuitives" at Maison Henri Poincaré (available on Institut Henri Poincaré youtube Channel)
https://www.youtube.com/watch?v=_4tbqneuRqw&ab_channel=InstitutHenriPoincar%C3%A9
- Theatre short play "**Emmy doesn't care**" (Emmy s'en moque)
The play was translated in French and the first performance was prepared during and art and science stay in University of Angers, supported by *Maison des Mathématiques de l'Ouest, Région Pays de la Loire via le projet Connect Talent Hifran, and Institut Universitaire de France (IUF)*

in collaboration with Clotilde Fermanian-Kammerer, Coni Rojas-Molina. Nicolas Raymond.

Performances followed by discussion with myself and other mathematician were then presented in :

Université d'Angers (October 2023)

Université de Toulon (March 2024)

CIRM, stage "Cigales", national based intensive spiring school for selected high school female students (April 2024)

Salon de Culture et Jeux Mathématique, Paris (Mai 2024)

Two performances planned in 2025 :

Festival dell'Ingenieria, Politecnico Milano (September 2025) Journée Nationale de l'APMP (Association Professeurs Mathématiques) (Octobre 2025)

- Theatre play **"Vita e sogni di Mr.Pauli"** (Life and dream of Mr.Pauli (Ed ScienzaExpress 2020) performed in "Teatro e scienza" 2014 and 2020, 2021 in Torino, Italy (www.teatroescienza.it); with support by *Annales Henri Poincaré* and *Institut Archimède* to be perfoemed in July 2025 in Marseille with support of Bourse AMU, CPT, Annales Henri Poincaré, Ville de Marseille
- Theatre play **"Fisica e Diamanti"** about Mme Emilie du Châtelet, performed in "Teatro e scienza" 2024 INSMI grant obtanited for translation in French and performance at Université d'Angers, November 2025
- Storie di donne e di pianura, Edizioni Schena, 2014
- La venditrice di sogni, litterary prize Valerio Gentile, Edizioni Schena, 2008