

August 2019

Curriculum Vitae Nicola Pinamonti

Work address:

Department of Mathematics
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Personal data

Male, born in Trento (Italy) April 8, 1975;
Nationality: Italian;
Married with Anna Fantelli since June 4, 2005;
Father of Luigi Pinamonti, born November 27, 2006;
Father of Aurora Pinamonti, born October 13, 2009;

Present Position

Full Professor of Mathematical Physics at the Department of Mathematics of the University of Genova.

Education

2003 Ph.D. course in Physics at the Physics Department of the Trento University (Italy)
Advisor: Prof. Luciano Vanzo. (*Trento, Italy, 2000–2003*)
Ph.D. Thesis: “*On some aspects of two-dimensional classical and quantum black hole*”.
Defended at the Department of Physics of the University of Trento (Italy) (*February 27, 2003*).

1999 Graduation course in Physics at the Trento University (Italy) (*Trento, Italy, 1994–1999*)
Thesis Title: “*Descrizione quantistica di un evento in una teoria con simmetria conforme.*”
(“*Quantum description of an event in a theory with conformal symmetry*”)
Discussed in Trento, Italy (*July 26, 1999*), Advisor: Prof. Marco Toller marks 110 / 110.

Further Education

2000 Conservatorio Statale di Musica “Bonporti” of Trento (Italy) (1995-2000)
Classical Trumpet diploma.

1994 Liceo Scientifico Statale “B. Russell” Cles (Italy) (High School) (1989–1994)
Maturità Scientifica marks 56 / 60.

Spoken Languages

Italian: First language English: Fluent German: Fluent

Working Experiences and Fellowships

- 2017 **Full Professor in Mathematical Physics** at the Department of Mathematics of the University of Genova
(Genova (Italy), since 01/10/2017)
- 2014 **Associate Professor in Mathematical Physics** at the Department of Mathematics of the University of Genova
(Genova (Italy), 01/07/2014 – 30/09/2017)
- 2011 **Ricercatore Universitario (Assistant Professor) in Mathematical Physics** at the Department of Mathematics of the University of Genova
(Genova (Italy), 30/12/2010 - 30/06/2014)
- 2010 **Post-doctoral position:** Department of Mathematics, University of Tor Vergata Roma
Supervisor: Prof. Roberto Longo.
To perform research within the European Research Council (ERC) project “*Operator Algebras and Conformal Field Theory*” (ERC Advanced Grant 227458)
(Roma (Italy), 01/02/2010 - 31/01/2012)
- 2009 **Post-doctoral position:** II Institut für Theoretische Physik, Universität Hamburg, Germany
Supervisor: Prof. Klaus Fredenhagen.
Project “*Thermodynamics of quantum fields in nonstationary spacetimes.*”
(Section of the Sonderforschungsbereich 676 of the Hamburg University)
(Hamburg (Germany), 01/01/2009 - 31/12/2010)
- 2007 **Post-doctoral position:** II Institut für Theoretische Physik, Universität Hamburg, Germany
Supervisor: Prof. Klaus Fredenhagen.
Project “*Thermodynamics of quantum fields in nonstationary spacetimes.*”
(Section of the Sonderforschungsbereich 676 of the Hamburg University)
(Hamburg (Germany), 01/01/2007 - 31/12/2008)
- 2004 **Post-doc fellowship:** Department of Mathematics of the University of Trento. Founded by “Provincia Autonoma di Trento” and “INdAM (Istituto Nazionale di Alta Matematica)”.
Supervisor: Prof. Valter Moretti.
Project “*Aspects of Local Quantum Physics in Algebraic Approach*”
(Trento (Italy), 01/01/2004 - 31/12/2006)
- 2003 **Research-collaboration contract:** Department of Mathematics of the Trento University.
(Trento (Italy), 06/2003 - 10/2003)
- 2000 **Ph.D. course fellowship:** Department of Physics of the Trento University.
(Trento (Italy), 2000-2003)
- 1999 **Fellowship** at the Trento University to complete the work started during the graduation thesis.
(Trento (Italy), 10/1999 - 01/2000)

Awards and Honors

- 2013 National Scientific Qualification (Italian Habilitation). Call of the year 2012. Awarded with the Habilitation both as **Full Professor** and as **Associate Professor** in Mathematical Physics (MAT07) (ASN 2012)
- 2013 Principal investigator in the GNFM-INdAM **research project** “*Influenza della materia quantistica sulle fluttuazioni gravitazionali.*” (Influence of quantum matter on gravitational fluctuations), in collaboration with Dr. Claudio Dappiaggi, funded by GNFM (Gruppo Nazionale di Fisica Matematica) with the funds reserved for young researchers for the year 2013.
- 2012 Participation in the GNFM-INdAM **research project** “*Elettromagnetismo su spaziotempi curvi: cariche topologiche e struttura della teoria interagente*” (Electromagnetic theories on curve spacetimes: topological charges and structures of interacting theories), in collaboration with Dr. Claudio Dappiaggi, was funded by GNFM (Gruppo Nazionale di Fisica Matematica) with the funds reserved for young researchers for the year 2012.

- 2010 Principal investigator in the GNFM-INdAM **research project** “*Stati quantistici di Hadamard e radiazione di Hawking da buchi neri rotanti.*” (Hadamard quantum states and Hawking radiation for rotating black holes), in collaboration with Dr. Claudio Dappiaggi, funded by GNFM (Gruppo Nazionale di Fisica Matematica) with the funds reserved for young researchers for the year 2010.
- 2006 **Von Humboldt fellowship:** project: “*Quantum fields on cosmological horizons and backreaction.*” This fellowship was not used because of the overlap with a previously accepted position.
- 2006 Participation in the GNFM-INdAM **research project** “*Olografia e spazitempo asintoticamente piatti: un approccio rigoroso.*” (Holography and asymptotically flat spacetime: a rigorous approach), in collaboration with Dr. Claudio Dappiaggi, was funded by GNFM (Gruppo Nazionale di Fisica Matematica) with the funds reserved for young researchers for the year 2006.

Papers published in international journals

1. N. Pinamonti, K. Sanders, R. Verch “*Local incompatibility of the microlocal spectrum condition with the KMS property along spacelike directions in quantum field theory on curved spacetime,*” *Lett. Math. Phys.* **109** (8) 1735-1745 (2019).
2. F. Bambozzi, M. Murro, N. Pinamonti “*Invariant states on Weyl algebras for the action of the symplectic group,*” Accepted for publication on IMRN (2018) [1802.02487 [math.OA]].
3. N. Drago, F. Faldino, N. Pinamonti “*Relative Entropy and Entropy Production for Equilibrium States in pAQFT,*” *Ann. Henri Poincaré* **19** 3289-3319 (2018).
4. N. Drago, F. Faldino, N. Pinamonti “*On the stability of KMS states in perturbative algebraic quantum field theories,*” *Commun. Math. Phys.* **357** 267-293 (2018).
5. M. Gransee, N. Pinamonti, R. Verch “*KMS-like Properties of Local Equilibrium States in Quantum Field Theory,*” *J. Geom. Phys.* **117** 15-35 (2017).
6. S. Doplicher, K. Fredenhagen, G. Morsella, N. Pinamonti “*Dark matter and weak signals of quantum spacetime,*” *Phys. Rev.* **D 95** 065009 (2017).
7. N. Drago, T. P. Hack, N. Pinamonti “*The generalised principle of perturbative agreement and the thermal mass,*” *Ann. Henri Poincaré* **18** 807 (2017).
8. R. Brunetti, K. Fredenhagen, T. P. Hack, N. Pinamonti, K. Rejzner “*Cosmological perturbation theory and quantum gravity*” *JHEP* 2016:**32** (2016).
9. A. Codispoti, N. Pinamonti “*Interplay of Boltzmann Equation and Continuity Equation for Accelerated Electrons in Solar Flares*” *SIAM J. Appl. Math.*, **76** (4) 1250-1269 (2016).
10. C. Dappiaggi, G. Nosari, N. Pinamonti “*The Casimir effect from the point of view of algebraic quantum field theory,*” *Math. Phys. Anal. Geom.* **19** 12 (2016).
11. A. Géré, T. P. Hack, N. Pinamonti “*An analytic regularisation scheme on curved spacetimes with applications to cosmological spacetimes*” *Class. Quantum Grav.* **33** 9 (2016).
12. S. Giordano, N. Pinamonti, A. M. Massone, M. Piana “*The process of data formation for the Spectrometer/Telescope for Imaging X-rays (STIX) in Solar Orbiter*” *SIAM J. Imaging Sci.* **8** (2) 1315-1331 (2015).
13. N. Pinamonti, D. Siemssen “*Scale-Invariant Curvature Fluctuations from an Extended Semiclassical Gravity,*” *J. Math. Phys.* **56** 022303 (2015).
14. N. Pinamonti, D. Siemssen “*Global Existence of Solutions of the Semiclassical Einstein Equation in Cosmological Spacetime,*” *Commun. Math. Phys.* **334** 171-191 (2015).
15. G. Caviglia, A. Morro, N. Pinamonti “*The Klein-Gordon equation in mixture models of tumour growth,*” *Phys. Lett. A* **378** 3607-3613 (2014).

16. N. Drago, N. Pinamonti, “*Influence of quantum matter fluctuations on geodesic deviation*”, J. Phys. A Math. Theor. **47** 375202 (2014).
17. G. Collini, V. Moretti, N. Pinamonti “*Tunnelling Black-Hole Radiation with φ^3 Self-Interaction: One-Loop Computation for Rindler Killing Horizons*”, Lett. Math. Phys. **104** 217-232 (2014).
18. S. Doplicher, G. Morsella, N. Pinamonti “*On Quantum Spacetime and the horizon problem*”, J. Geom. Phys. **74** 196-210 (2013).
19. A. Codispoti, G. Torre, M. Piana and N. Pinamonti “*Return Currents and Energy Transport in the Solar Flaring Atmosphere*” Astro. Phys. J. **773** 121 (2013).
20. G. Torre, N. Pinamonti, A. G. Emslie, J. Guo, A. M. Massone and M. Piana “*Empirical determination of the energy loss rate of accelerated electrons in a well-observed solar flare*”, Astro. Phys. J. **751** (2) 129 (2012).
21. V. Moretti, N. Pinamonti, “*State independence for tunneling processes through black hole horizons and Hawking radiation*”, Commun. Math. Phys. **309** 295-311 (2012).
22. N. Pinamonti, “*On the initial conditions and solutions of the semiclassical Einstein equations in a cosmological scenario*”, Commun. Math. Phys. **305** 563-604 (2011).
23. C. Dappiaggi, V. Moretti, N. Pinamonti, “*Rigorous construction and Hadamard property of the Unruh state in Schwarzschild spacetime*”, Adv. Math. Theo. Phys. **15** 355-447 (2011).
24. C. Dappiaggi, T.-P. Hack, N. Pinamonti, “*Approximate KMS states for scalar and spinor fields in Friedmann-Robertson-Walker spacetimes*”, Ann. Henri Poincaré **12** 1449-1489 (2011).
25. C. Dappiaggi, N. Pinamonti, M. Porrmann, “*Local causal structures, Hadamard states and the principle of local covariance in quantum field theory*”, Commun. Math. Phys. **304** 459-498 (2011).
26. V. Moretti, N. Pinamonti, “*Black Hole Horizons and Thermodynamics: A Quantum Approach*”, Entropy **12** 1833-1854 (2010).
27. C. Dappiaggi, T. P. Hack, N. Pinamonti, “*The extended algebra of observables for Dirac fields and the trace anomaly of their stress-energy tensor*”, Rev. Math. Phys. **21** 1241-1312 (2009).
28. C. Dappiaggi, V. Moretti, N. Pinamonti, “*Distinguished quantum states in a class of cosmological spacetimes and their Hadamard property*”, J. Math. Phys. **50** 062304 (2009).
29. N. Pinamonti, “*Conformal generally covariant quantum field theory: The scalar field and its Wick products*”, Commun. Math. Phys. **288** 1117-1135 (2009).
30. C. Dappiaggi, V. Moretti, N. Pinamonti, “*Cosmological horizons and reconstruction of quantum field theories*”, Commun. Math. Phys. **285** 1129-1163 (2009).
31. C. Dappiaggi, K. Fredenhagen, N. Pinamonti, “*Stable cosmological models driven by a free quantum scalar field*”, Phys. Rev. **D 77** 104015 (2008).
32. N. Pinamonti, “*On Localization and position operator in Möbius-covariant theories*”, Rev. Math. Phys. **19** 385-403 (2007).
33. C. Dappiaggi, V. Moretti, N. Pinamonti, “*Rigorous Steps Towards Holography in Asymptotically Flat Spacetimes*”, Rev. Math. Phys. **18** 349-416 (2006).
34. V. Moretti, N. Pinamonti “*Bose-Einstein condensate and Spontaneous Breaking of Conformal Symmetry on Killing Horizons*”, J. Math. Phys. **46** 062303 (2005).
35. N. Pinamonti, L. Vanzo “*Central charges and boundary fields for two dimensional dilatonic black holes.*”, Phys. Rev. **D 69** 084012 (2004).
36. V. Moretti, N. Pinamonti “*Virasoro algebra with central charge $c = 1$ on the horizon of a two-dimensional Rindler spacetime*”, J. Math. Phys. **45** 257 (2004).

37. V. Moretti, N. Pinamonti “*Holography and $SL(2, R)$ symmetry in 2D Rindler spacetime*”, J. Math. Phys. **45** 230 (2004).
38. A. Giacomini, N. Pinamonti “*Black hole entropy from classical Liouville theory*”, JHEP **0302** 014 (2003).
39. V. Moretti, N. Pinamonti “*Aspects of hidden and manifest $SL(2, R)$ symmetry in 2D near-horizon black-hole backgrounds*”, Nuc. Phys. **B 647** 131-152 (2002).
40. N. Pinamonti, M. Toller “*Time Observables With Projective Covariance*”, J. Phys. **A 35** 3547-3558 (2002).

Books

1. C. Dappiaggi, V. Moretti, N. Pinamonti “*Hadamard States from Light-like Hypersurfaces*,” Springer-Brief (2017) ISBN 978-3-319-64342-7 [1706.09666 [math-ph]]

Invited contributions in books

1. K. Fredenhagen, T.-P. Hack, N. Pinamonti “*Thermodynamics of Quantum Fields in Nonstationary Spacetimes*,” Book Chapter (2018) [1809.08557 [gr-qc]]
2. T.-P. Hack, N. Pinamonti “*Cosmological Applications of Algebraic Quantum Field Theory*” Chapter 6 of the Book “*Advances in Algebraic Quantum Field Theory*” Mathematical Physics Studies, Springer (2015), ISBN:978-3-319-21353-1
3. V. Moretti, N. Pinamonti “*Holography and conformal symmetry near black hole horizons*”, invited contribution to the book “*Quantum Gravity and Cosmology*”, Special issue of Vestnik of Tomsk State Pedagogical University, 7 (44) (2004) (December). Pages 109-115. ISSN 1609-624X. S.D. Odintsov (Editor).
4. V. Moretti, N. Pinamonti, *The interplay of conformal invariance, Quantum Field Theory near the horizon of a 2D black hole and Holography* invited contribution to the book “*Focus in Mathematical Physics Research*” Charles V. Benton (Editor) Nova Science Publishers, Inc. NY, (2004), ISBN:1-59033-923-1

Preprints

1. S. Doplicher, G. Morsella, N. Pinamonti “*Perturbative Algebraic Quantum Field Theory on Quantum Spacetime: Adiabatic and Ultraviolet Convergence*,” (2019) [1906.05855/]
2. J. Braga de Góes Vasconcellos, N. Drago, N. Pinamonti “*Equilibrium states in Thermal Field Theory and in Algebraic Quantum Field Theory*,” (2019) [1906.04098/]
3. C. Dappiaggi, T.-P. Hack, J. Möller, N. Pinamonti, “*Dark Energy from Quantum Matter*”, Desy 10-113, Preprint July (2010) [1001.5009 [astro-ph]].
4. N. Pinamonti, “*De Sitter Quantum Scalar Field and Horizon Holography*”, UTM 681 Preprint May (2005) [hep-th/0505179].

Teaching experience

- 2018/2019 Lecturer in “*Modelli di sistemi continui e applicazioni*” (“*Model of continuum systems and applications*”) at master course in Mathematics of the University of Genova.
- 2018/2019 Lecturer in “*Metodi Matematici per la Meccanica Quantistica*” (“*Mathematical Methods in Quantum Mechanics*”) at master course in Mathematics of the University of Genova.
- 2018/2019 Lecturer in “*Meccanica Analitica*” (“*Analytical Mechanics*”) at graduation course in Physics and Mathematics of the University of Genova.
- 2017/2018 Lecturer in “*Modelli di sistemi continui e applicazioni*” (“*Model of continuum systems and applications*”) at master course in Mathematics of the University of Genova.

- 2017/2018 Lecturer in “*Metodi Matematici per la Meccanica Quantistica*” (“*Mathematical Methods in Quantum Mechanics*”) at master course in Mathematics of the University of Genova.
- 2017/2018 Lecturer in “*Meccanica Analitica*” (“*Analytical Mechanics*”) at graduation course in Physics and Mathematics of the University of Genova.
- 2016/2017 Lecturer in “*Modelli di sistemi continui e applicazioni*” (“*Model of continuum systems and applications*”) at master course in Mathematics of the University of Genova.
- 2016/2017 Lecturer in “*Metodi Matematici per la Meccanica Quantistica*” (“*Mathematical Methods in Quantum Mechanics*”) at master course in Mathematics of the University of Genova.
- 2016/2017 Lecturer in “*Meccanica Analitica*” (“*Analytical Mechanics*”) at graduation course in Physics and Mathematics of the University of Genova.
- 2015/2016 Lecturer in “*Istituzioni di Fisica Matematica 2*” (“*Foundations of Mathematical Physics 2*”) at master course in Mathematics of the University of Genova.
- 2015/2016 Lecturer in “*Meccanica Analitica*” (“*Analytical Mechanics*”) at graduation course in Physics and Mathematics of the University of Genova.
- 2014/2015 Lecturer in “*Istituzioni di Fisica Matematica 2*” (“*Foundations of Mathematical Physics 2*”) at master course in Mathematics of the University of Genova.
- 2014/2015 Lecturer in “*Meccanica Analitica*” (“*Analytical Mechanics*”) at graduation course in Physics and Mathematics of the University of Genova.
- 2013/2014 Lecturer in “*Istituzioni di Fisica Matematica 2*” (“*Foundations of Mathematical Physics 2*”) at master course in Mathematics of the University of Genova.
- 2013/2014 Lecturer in “*Sistemi Dinamici e Meccanica Analitica*” (“*Dynamical Systems and Analytical Mechanics*”) at graduation course in Physics and Mathematics of the University of Genova.
- 2012/2013 Lecturer in “*Sistemi Dinamici e Meccanica Analitica*” (“*Dynamical Systems and Analytical Mechanics*”) at graduation course in Mathematics of the University of Genova.
- 2012/2013 Assistant lecturer in “*Meccanica Analitica 2*” (“*Analytical Mechanics 2*”) at graduation course in Physics of the University of Genova.
- 2012/2013 Assistant lecturer in “*Meccanica Analitica 1*” (“*Analytical Mechanics 1*”) at graduation course in Physics of the University of Genova.
- 2011/2012 Lecturer in “*Sistemi Dinamici e Meccanica Analitica*” (“*Dynamical Systems and Analytical Mechanics*”) at graduation course in Mathematics of the University of Genova.
- 2011/2012 Assistant lecturer in “*Meccanica Analitica 2*” (“*Analytical Mechanics 2*”) at graduation course in Physics of the University of Genova.
- 2011/2012 Assistant lecturer in “*Meccanica Analitica 1*” (“*Analytical Mechanics 1*”) at graduation course in Physics of the University of Genova.
- 2010/2011 Assistant lecturer in “*Meccanica Analitica 1*” (“*Analytical Mechanics 1*”) at graduation course in Physics of the University of Genova.
- 2010/2011 Assistant lecturer in “*Sistemi Dinamici e Meccanica Analitica*” (“*Dynamical Systems and Analytical Mechanics*”) at graduation course in Mathematics of the University of Genova.
- 2002/2003 Assistant lecturer in “*Mathematical methods in Physics*” at graduation course in Physics of the Trento University.
- 2001/2002 Assistant lecturer in “*Continuum mechanics*” at graduation course in Mathematics and Physics of the Trento University.
- 2000/2001 Assistant lecturer in “*Geometry I*” at graduation course in Mathematics and Physics of the Trento University.

- Member of the evaluation committee for the defense of a PhD thesis in Mathematics. (*January 9th, 2009, Department of Mathematics, Trento University*)
- Member of the evaluation committee for the defense of a PhD thesis in Physics. (*November 3rd, 2011, Department of Physics, Trento University*)
- Member of the evaluation committee for the defense of 4 PhD thesis in Mathematics. (*April 11th, 2013, Department of Mathematics, University of Genova*)
- Member of the evaluation committee for the defense of some PhD thesis in Physics. (*April 16th, 2014, Department of Physics, University of Cagliari*)
- Member of the evaluation committee for the defense of 4 PhD thesis in Physics. (*January 12th, 2015, Department of Physics, University of Pavia*)

Advisor of the Bachelor Thesis in Mathematics of the following students

- Franco Savino (2018)
- Chiara Pedemonte (2017)
- Stefano Verbena (2016)
- Giacomo Bisagno (2015)
- Mattia Muzio (2015)
- Davide Illiano (2014)
- Daniele Zec (2013)

Advisor of the following Master Thesis in Mathematics

- Master Thesis in Mathematics of Mattia Muzio. "Low Energy States in FRW spacetimes", University of Genova (*2019*)
- Master Thesis in Theoretical Physics of Matteo Crovetto. "Gravitational waves generated by point-like objects in postnewtonian approximation", University of Genova (*2019*)
- Master Thesis in Theoretical Physics of Stefano Bertolotto. "Stability of solution of semiclassical Einstein equations in cosmology", University of Genova (*2018*)
- Master Thesis in Theoretical Physics of Paolo Meda. "Analytic Properties of OPE in Globally Hyperbolic Spacetime" University of Genova (*2018*)
- Master Thesis in Mathematics of Elisa Surace. "Bose-Einstein condensation for diluted gases in a potential trap", University of Genova (*2018*)
- Master Thesis in Mathematics of Mario De Simoni. "Time evolution in quantum mechanics: the problem of self-adjoint extension of unbounded operators", University of Genova (*2014*)
- Master Thesis in Mathematics of Nicolò Drago. "Influence of matter quantum fields on the geodesic motion", University of Genova (*2013*)
- Master Thesis in Mathematics of Anna Codispoti. "Electron Maps and continuity equation: a model for solar flares based on images" Together with Prof. M. Piana. Univ. of Genova (*2012*)

Advisor of the following PhD Students

- Advisor of Daniel Siemssen. PhD Student, at the School of Mathematics of the University of Genova, Thesis Title "The Semiclassical Einstein Equation on Cosmological Spacetimes" (*from January 1st, 2012 till December 31st 2014, Department of Mathematics, University of Genova*)
- Advisor of Antoine Gèrè. PhD Student, at the School of Mathematics of the University of Genova, Thesis Title "Analytic regularization of quantum field theories on curved backgrounds" (*from January 1st, 2013 till December 31st 2015, Department of Mathematics, University of Genova*)

- Co-Advisor of Anna Codispoti. PhD Student, at the School of Mathematics of the University of Genova, Thesis Title "Transport equations in solar flares: inversion approaches and experimental validation" Prof. M. Piana is the other Advisor. (*from January 1st, 2013 till December 31st 2015, Department of Mathematics, University of Genova*)
- Advisor of Nicolò Drago. PhD Student, at the School of Mathematics of the University of Genova, Thesis Title "Perturbative methods in Algebraic QFT with applications to Thermal Field Theory" (*from January 1st, 2014 till December 31st 2016, Department of Mathematics, University of Genova*)
- Advisor of Federico Faldino. PhD Student, at the School of Mathematics of the University of Genova, Thesis Title "Facets of Non-Equilibrium in Perturbative Quantum Field Theory. An Algebraic Approach" (*from November 1st, 2015 till October till December 31st 2018, Department of Mathematics, University of Genova*)
- Advisor of João Braga Vasconcellos. PhD Student, at the School of Mathematics of the University of Genova, working on notions of local thermal states in quantum field theories on curved spacetimes. (*from November 1st, 2016, Department of Mathematics, University of Genova*)

Supervisor of other scientists

2013 In the period (May 2013-April 2015) I supervised the postdoctoral work of Thomas-Paul Hack. During that period Thomas-Paul Hack was affiliated to the Department of Mathematics of the University of Genova. His work was funded by a Scholarship of the German DFG obtained to work under my supervision.

Invited Talks and Invited Lectures

- 2019 "*Semiclassical Einstein equations and their fluctuations in cosmological spacetimes*" Invited seminar within the MITP Program DMDE2019 (*Mainz, 4th of June, 2019*).
- 2019 "*Perturbative algebraic quantum field theory and equilibrium states*" Invited seminar at the 43rd LQP Meeting (*Firenze, February the 21st, 2019*).
- 2018 "*Thermal properties of QFT near spherically symmetric apparent horizons and Black Hole thermodynamics*" Invited seminar at the Workshop "Energy conditions in quantum theory and gravity", (*York, September the 21st, 2018*).
- 2018 "*Thermal properties of QFT near spherically symmetric apparent horizons and Black Hole thermodynamics*" Seminar at the SIGRAV 2018 Meeting, (*Sardinia, September the 13th, 2018*).
- 2018 "*Thermal states in pAQFT: stability, relative entropy and entropy production*" Invited seminar at the BIRS program "Physics and Mathematics of QFT", (*Banff, August the 2nd, 2018*).
- 2018 "*Thermal states in pAQFT: stability, relative entropy and entropy production*" Invited seminar at ITP Leipzig University of Leipzig (*Leipzig, January the 8th, 2018*).
- 2017 "*Thermal states in pAQFT: stability, relative entropy and entropy production,*" Invited seminar at the Workshop "Quantum Physics meets Mathematics", on the occasion of Klaus Fredenhagen 70th birthday (*Hamburg, December 9th, 2017*).
- 2017 "*Thermal states in perturbative algebraic quantum field theory: stability, relative entropy and entropy production*" Invited seminar at the Workshop "Modern mathematics of Quantum Theory", (*York, September 7th, 2017*).
- 2016 "*Stability of thermal states in perturbative algebraic quantum field theory.*" Invited seminar at the Department of Mathematics of the University of Regensburg (*Regensburg, November 29th, 2016*).
- 2016 "*Quantum states on cosmological spacetimes and quantum fluctuations.*" Invited seminar at the Workshop "Operator Algebras and Quantum Field Theory" Dedicated to the memory of John E. Roberts (*Frascati (Roma), June 27th 2016*).

- 2015 “*The generalised principle of perturbative agreement and the thermal mass.*” Invited seminar at the Workshop “Quantum Field Theory: Infrared problems and constructive aspects” (*München, October 8th 2015*).
- 2015 “*An analytic regularization scheme for time-ordered products on curved spacetimes.*” Invited seminar at the "Jahrestagung der Deutschen Mathematiker-Vereinigung 2015" (seminar organized by the German Mathematical Society) (*Hamburg, September 25th 2015*).
- 2015 “*Analytic regularization methods for interacting field theories on curved spacetimes.*” Invited seminar at the Workshop "New Trends in Algebraic Quantum Field Theory 2015" (*Frascati, February 11th 2015*).
- 2015 “*The generalized principle of perturbative agreement in perturbative algebraic quantum field theory*” Invited seminar at the Department of Mathematics of the University of Regensburg (*Regensburg, January 23rd 2015*).
- 2014 “*Quantum field theory on curved spacetime and semiclassical Einstein equations*” Invited seminar at the Department of Physics of the University of Firenze (*Firenze, December 3rd 2014*).
- 2014 “*Quantum field theory on curved spacetime and semiclassical Einstein equations*” Plenary talk at the SIGRAV XXI National Conference (*Alessandria, September 17th 2014*).
- 2014 “*Quantum field theory on curved spacetime and semiclassical Einstein equations*” Invited seminar at Conference “Estate Quantistica 2014” (*Scalea, September 4th 2014*).
- 2014 “*Influence of quantum matter fluctuations on the expansion parameter of timelike geodesics*” Invited seminar at Conference “Frontiers of Fundamental Physics 14” (*Marseille, July 16th 2014*).
- 2014 “*Influence of quantum matter fluctuations on the expansion parameter of timelike geodesics*” Invited seminar at Annual Meeting of GREFI-GENCO “Noncommutative geometry and applications” (*Villa Mondragone, Frascati, Rome, June 16th - 21st 2014*).
- 2014 “*Influence of quantum matter fluctuations on the expansion parameter of timelike geodesics*” Invited seminar at the Erwin Schrödinger Institute in the Workshop “Algebraic quantum field theory: its status and its future” (*ESI Vienna, May 19th - 23rd 2014*).
- 2013 “*Semiclassical Einstein equations and their fluctuations in cosmological spacetime*” Invited seminar at the mini-Workshop “New Crossroads between Mathematics and Field Theory” (*Oberwolfach, July 21st - 27th 2013*).
- 2013 “*Metric fluctuations induced by quantum matter in cosmology*” Invited seminar at the Department of Mathematics of the University of (*Göttingen, January 10th 2013*).
- 2012 “*Quantum space-time and the horizon problem*” Invited seminar at the meeting “New Trends in Algebraic Quantum Field Theory” (*Roma, September 14th 2012*).
- 2012 “*Quantum Field Theory on Curved Spacetimes: the Algebraic Approach*” Invited seminar at the Workshop “Mathematical Aspects of Quantum Field Theory and Quantum Statistical Mechanics” on the occasion of the 90th birthday of Prof. Rudolf Haag. (*Hamburg (Germany), July 30th 2012*).
- 2012 “*The horizon problem in quantum spacetimes*” Invited seminar at the annual “LQP Meeting” (*Paderborn (Germany), June 22nd 2012*).
- 2012 “*Quantum space-time and the horizon problem*” Invited seminar by Prof. K. Fredenhagen at II. Institut f. Theoretische Physik, University of Hamburg (*Hamburg (Germany), June 6th 2012*).
- 2012 “*Quantum space-time and the horizon problem*” Invited seminar at the “Bayrischzell Workshop 2012 Noncommutativity and Physics: Spacetime Quantum Geometry” (*Bayrischzell (Germany), May 26th 2012*).
- 2011 “*Quantum Spacetime and the Horizon Problem*” Invited seminar at SISSA (*Trieste (Italy), December 1st 2011*).

- 2011 “*Tunneling processes through black hole horizons and Hawking radiation*”
Invited seminar at NITHeP Workshop “Constructive and Perturbative Aspects of Quantum Field Theory” (Durban (South Africa), August 18th 2011).
- 2011 “*State independence for tunneling processes through black hole horizons and Hawking radiation*”
Invited seminar by Prof. K. Fredenhagen at II. Institut f. Theoretische Physik, University of Hamburg (Hamburg (Germany), July 12th 2011).
- 2011 “*Semiclassical Einstein equations and non-commutative spacetimes*” Invited seminar at “EU - NCG 4th Annual Meeting” (Bucarest (Romania), April 25th – 30 2011).
- 2011 “*Existence and uniqueness of solutions of the semiclassical Einstein equations in a cosmological scenario*.” Invited seminar at the meeting of the GNFM (National Group of Mathematical Physics) (Montecatini (Italia), March 3rd – 5th 2011).
- 2011 “*Semiclassical Einstein Equations in Cosmology*” Invited seminar at the meeting “Foundational Aspects of Cosmology” (Hamburg (Germany), February 16th – 18th 2011).
- 2010 “*Semiclassical Einstein Equations: Existence of Solutions with Relevance in Cosmology*”
Invited contribution to the NITHeP Workshop “Quantum Field Theory on Curved Spacetime - From the Algebraic Approach to Local Covariance” (Durban (South Africa), August 23rd, 2010).
- 2010 “*Semiclassical Einstein equations and cosmology*”
Invited seminar, by Prof. M. Carfora, at the conference “Problemi attuali in Fisica Teorica”. (Open Questions in Theoretical Physics) (Vietri sul mare SA (Italy), March 29th, 2010).
- 2010 “*Semiclassical Einstein equations: Existence and properties of their cosmological solutions*”
Invited seminar, by Prof. S. Doplicher, at the Department of Mathematics of La Sapienza University, Rome. (Rome (Italy) March 17th, 2010).
- 2009 “*Quantum field theory on curved spacetime and backreaction*”
Invited seminar at the Department of Mathematics of Tor Vergata University, Rome. (Rome (Italy) November 19th, 2009).
- 2009 “*Semiclassical Einstein equations: a bridge between quantum field theory and cosmology*”
Invited seminar by Prof. Buchholz and Prof. Rehren at the Institute for Theoretical Physics, Göttingen. (Göttingen (Germany) June 30th, 2009).
- 2009 “*Aspects of Quantum Fields on Cosmological Models*”
Invited seminar (Hauptvortrag) at the DPG-Frühjahrstagung 2009 (Meeting of the German Physical Society) section of Mathematical Physics. (München (Germany) March 12th, 2009).
- 2008 “*Quantum states on inflationary cosmological models and their Hadamard property*”
Invited talk at the Workshop “Quantum Structures, Gravity, Mathematics and Physics”, organized by Prof. R. Verch and Prof. G. Rudolph. Institut f. Theoretische Physik at Leipzig University (Leipzig (Germany) November 22nd, 2008).
- 2008 “*Introduction to Quantum Field Theory in Curved Spacetime*”
Invited Lecture given at the Institut f. Theoretische Physik at Leipzig University (Leipzig (Germany) November 18th, 2008).
- 2008 “*Solutions of the semiclassical Einstein equations with possible interpretations in Cosmology*”
Invited talk at the School of Mathematics of the Trinity College Dublin (Dublin (Ireland) April 21st, 2008).
- 2008 “*Stable cosmological models with a free quantum field as source*”
Invited seminar, at Physics Department of Trento University (Trento (Italy) February 7th, 2008).
- 2007 “*Localization and position operators in Möbius covariant theories.*”
Invited seminar by Prof. R. Brunetti, K. Fredenhagen, D. Kreimer and J. Yngvason, at Erwin Schrödinger Institute Wien within the Workshop “New Developments in Perturbative Quantum Field Theory” (ESI Wien) , (Wien (A), March 26th, 2007).

- 2006 “*Conformal symmetry breaking on Black Hole horizons*”
Invited seminar by Prof. K. Fredenhagen at II Institut für Theoretische Physik at Desy (Hamburg University) , (Hamburg (D), February 22nd, 2006).
- 2005 “*Conformal symmetry breaking on Killing horizons*”
Invited seminar by Prof. B. Kay at the Department of Mathematics of York’s University, (York (UK), January 27th, 2005).
- 2004 “*Conformal Symmetry and Virasoro Algebra near the Black Holes Horizons*”
Invited contribution, at XIII LQP Workshop (Goettingen (Germany) January 23rd, 2004).
- 2004 “*Conformal Symmetry and Virasoro Algebra near the Black Holes Horizons*”
Invited seminar by Professor Zeidler at Max Planck Institute of Leipzig (Leipzig (Germany), January 21st, 2004)

Other contributions in Conferences and other Talks

- 2013 “*Tunneling processes through black hole horizons and Hawking radiation*” Contribution at the workshop GR20 (Warsaw , July 9th 2013).
- 2010 “*Cosmological solutions of the semiclassical Einstein equations*”
at CIRM Marseille within the workshop Quantum Groups and Noncommutative Geometry , (Marseille (France) September 29, 2010).
- 2010 “*Semiclassical Einstein equations: Existence and properties of their cosmological solutions*”
at II Institut für Theoretische Physik at Desy (Hamburg University), (Hamburg (Germany) January 20, 2010).
- 2009 “*The Wick monomials in a conformally generally covariant quantum field theory*”
Contribution at the XXIV LQP Workshop (Leipzig (Germany) June 27, 2009).
- 2008 “*Solutions of the semiclassical Einstein equations with possible interpretations in Cosmology*”
Contribution at the DPG-Frühjahrstagung 2008 (Meeting of the German Physical Society) (Freiburg (Germany) March 5, 2008).
- 2008 “*Stable cosmological models driven by a free quantum scalar Field*”
SFB 676 Tagung Project C7 (Zeuthen (Germany) February 15, 2008).
- 2008 “*Solutions of the semiclassical Einstein’s equations with applications in cosmology*”
Contribution, at XXI LQP Workshop (Goettingen (Germany) January 25, 2008).
- 2007 “*Semiclassical Einstein equations: A solution with implications in cosmology.*”
at II Institut für Theoretische Physik at Desy (Hamburg University) , (Hamburg (Germany), November 21, 2007).
- 2007 “*Localization and position operators in Möbius covariant theories.*”
at II Institut für Theoretische Physik at Desy (Hamburg University) , (Hamburg (Germany), January 30, 2007).
- 2003 “*Hidden symmetry and holography in Rindler spacetime*”.
At Annual Workshop of the group INFN-BO11 (Bologna (Italy), June 16–17, 2001).
- 2002 “*dS/Cft Correspondence*”. ICRA weekly seminars (Pescara (Italy), 1 March 2002).
- 2001 “*Buchi neri bidimensionali, entropia e simmetrie all’orizzonte*”.
Qualifying seminar for the admission to the third year of Ph.D. course (Trento, Italy , November 28, 2001).
- 2001 “*Two Dimensional Black Hole Entropy and near Horizon Symmetry*”.
Annual Workshop of the group INFN-BO11 (Bologna, Italy, June 7–8, 2001).

Period of permanence in other scientific Institutions

- 2016 Invitation in Oberwolfach at the Workshop “*Recent Mathematical Developments in Quantum Field Theory*” by A. Abdesselam, S. Hollands, C. Kopper e G. Lechner, Oberwolfach (D) (*Oberwolfach, July 25–29 2016*)
- 2016 Invitation at the LNF-INFN to participate at the activities of the intensive trimester of research “*Mathematics and Physics at the Crossroads*” (*Frascati (Roma), June 27th – July 8th 2016*)
- 2013 Invitation in Oberwolfach at the Mini-Workshop “*New Crossroads between Mathematics and Field Theory*” by R. Brunetti, C. Bär, C. Dappiaggi, and K. Fredenhagen, Oberwolfach (D) (*Oberwolfach, July 21 – 27 2013*)
- 2010 Invitation at Erwin Schrödinger Institute Wien to take part of the Project “*Quantum field theory on curved space-times and curved target-spaces*” by M. Gaberdiel, S. Hollands, V. Schomerus, and J. Yngvason, Wien (A) (*Wien, April 11 – 17 2010*)
- 2008 Invitation by Professor R. Verch at Institut f. Theoretische Physik at Leipzig University (*Leipzig, November 17 – 22 2008*).
- 2008 Invitation at Erwin Schrödinger Institute Wien to take part of the Project “*Operator Algebras and Conformal Quantum Field Theory*” by Y. Kawahigashi, R. Longo, K.-H. Rehren and J. Yngvason, Wien (A) (*Wien, November 2 – 15 2008*)
- 2007 Invitation at Erwin Schrödinger Institute Wien to take part of the Project “*Mathematical and Physical Aspects of Perturbative Approaches to Quantum Field Theory*” by R. Brunetti, K. Fredenhagen, D. Kreimer and J. Yngvason, Wien (A) (*Wien, March 26 – April 30 2007*)
- 2006 Invitation by Professor K. Fredenhagen at II Institut für theoretische Physik at Desy, Hamburg (D) (*Hamburg, February 7 – 28, 2006*)
- 2005 Invitation by Professor B. Kay at the Department of Mathematics of the University of York (UK) (*York, January 24 – February 11, 2005*)
- 2004 Invitation by Professor Zeidler at Max Planck Institute of Leipzig for a collaboration with Prof. R. Verch (Germany) (*Leipzig, January 19–31, 2004*)
- 2003 II Institut für theoretische Physik at Desy, Hamburg (Germany) (*Hamburg, July 9–11, 2003*)

Referee’s activity

- Referee of *Advances in Mathematical Physics* (Hidawi Publishing Co);
- Referee of *Annales Henri Poincaré* (Birkhäuser);
- Referee of *Classical and Quantum Gravity* (Institute of Physics Publishing, UK);
- Referee of *Communications in Mathematical Physics* (Springer);
- Referee of *The European Physical Journal C* (Springer);
- Referee of *General Relativity and Gravitation* (Springer);
- Referee of *Journal of Geometry and Physics* (Elsevier);
- Referee of *Journal of Mathematical Physics* (AIP);
- Referee of *Physical Review D* (American Physical Society);
- Referee of *Reviews in Mathematical Physics* (World Scientific).

Organization of scientific activities and events

- 2018 Co-organizer of the INDAM Workshop “AQFT: where operator algebra meets microlocal analysis” (*June 04–08, 2018, Cortona, Italy*);
- 2017 Co-organizer of the Workshop “Microlocal analysis: a tool to explore the quantum world” (*January 12–13, 2017, Genova, Italy*);
- 2012 Co-organizer of the Workshop “Planckland: Quantum Geometry and Matter” (*February 13–18, 2012, SISSA, Trieste, Italy*);
- 2011 Co-organizer of the Workshop “Modern Trends in AQFT” (*September 14–16, 2011, University of Pavia, Italy*);
- 2011 Co-organizer of the Workshop “Two Days in QFT” (*January 10–11, 2011, University of Tor Vergata Roma and Laboratori Nazionali di Frascati-INFN, Rome Italy*);
- 2008 Co-organizer of the XXII LQP (Local Quantum Physics) Meeting (*June 6–7, 2008, Hamburg University*);
- 2007-2010 Co-organizer of the weekly Wednesday seminars in Mathematical Physics and Quantum Field Theory for the years 2007-2010 at the II Institut für Theoretische Physik (*2007-2010 Hamburg University*)
- 2006 Co-organizer of the Graduate school Topics in Operator Algebras and Non commutative Geometry: lectures by G. Landi and R. Verch (*March 20–26, 2006, Department of Mathematics, Trento University*)

Administration posts

- Elected Member of the Council of the School of Science of the University of Genova (September 2012 - September 2015)
- Elected Member of the Council of the Math Department of the University of Genova (July 2012 - October 2018)
- Member of the Departmental Committee governing the PhD course (since 2012)
- Coordinator of the PhD school in Mathematics and Application of the University of Genova (October 2014 - October 2018)

Other scientific affiliations

- Member of INFN Section of Genova
- Member of INDAM - GNFM
- Member of “International Association of Mathematical Physics”.

Genova, Italy, August 5, 2019

