

UNIVERSITÀ DEGLI STUDI DI MILANO

Procedura di selezione per la chiamata a professore di II fascia da ricoprire ai sensi dell'art. 18, commi 1 e 4, della Legge n. 240/2010 per il settore concorsuale 02/A2 - Fisica Teorica delle Interazioni Fondamentali, (settore scientifico-disciplinare FIS02 Fisica Teorica Modelli e Metodi Matematici) presso il Dipartimento di Fisica, (avviso bando pubblicato sulla G.U. n. 68 del 01/09/2020) - Codice concorso 4415

[Ugo Marzolino] CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	MARZOLINO
NOME	UGO
DATA DI NASCITA	03/12/1983

**INSERIRE IL PROPRIO CURRICULUM
(non eccedente le 30 pagine)****Education and training**

- Since 2019, July 1st** Fellowship Marie-Sklodowska-Curie COFUND Fellini (grant agreement No. 754496) at INFN (Italian national institute of nuclear physics) Unit Trieste, in the group of Prof. Fabio Benatti.
- 2017, March 14th - 2019, June 7th** Post-doctoral research fellowship, at the Ruder Boskovic Institute, Division of Theoretical Physics, in Zagreb, in the group of Dr. Fabio Franchini. Parental leave from 28/05/2018 to 24/09/2018.
- 2013, October 1st - 2017 March 10th** Post-doctoral research fellowship, at the University of Ljubljana, Faculty of Mathematics and Physics, in the group of Prof. Tomaž Prosen.
- 2012, October 1st - December 31st** Visiting position as invited researcher at the University Paul Sabatier of Toulouse, Laboratoire de Physique Théorique, in the group of Prof. Daniel Braun, funded by Centre National de la Recherche Scientifique (CNRS).
- 2012, January 16th - 2013 July 31st** Post-doctoral research fellowship, at the Albert-Ludwigs University of Freiburg, Institute of Physics, in the group of Prof. Andreas Buchleitner. The contract was suspended from 01/10/2012 to 31/12/2012 to allow me to accept a visiting position as invited researcher at the University Paul Sabatier of Toulouse.
- 2011, November 2nd - December 31st** Visiting position at the University of Trieste, Department of Physics, in the group of Prof. Fabio Benatti.

- 2011, May 2nd - November 1st** Post-doctoral research fellowship, at the University of Salerno, Department of Physics, in the group of Prof. Fabrizio Illuminati.
- 2008, April 14th - May 14th** Fellowship upon invitation at the University of Napoli "Federico II", Department of Physics, in the group of Prof. Giuseppe Marmo.
- 2008, January 1st - 2011, March 23rd** Ph.D. in physics with scholarship at the University of Trieste, Department of Theoretical Physics (merged into the Department of Physics in 2009), supervised by Prof. Fabio Benatti and Dr. Roberto Floreanini. Thesis defended on March 23th, 2011, final mark excellent. Thesis: "Entanglement and decoherence in many-body physics".
- 2005, October 1st - 2007, July 19th** Laurea specialistica (equivalent to Master of Science) in physics, University of Roma "La Sapienza" (theoretical curriculum). Thesis defended on July 19th, 2007, final mark 110/110 cum laude. Graduation thesis: "Entanglement multipartito e sistemi disordinati" (Multipartite entanglement and disordered systems), supervised by Prof. Giorgio Parisi, Prof. Saverio Pascazio, and Prof. Paolo Facchi.
- 2002, October 1st - 2005, October 5th** Laurea triennale (equivalent to Bachelor of Science) in physics, University of L'Aquila. Thesis defended on October 5th, 2005, final mark 110/110 cum laude. Graduation thesis: "Un modello di decoerenza in meccanica quantistica" (A model of decoherence in quantum mechanics), supervised by Prof. Alessandro Teta.

National and international projects

- 2019, July 8th - September 29th** - Competitive funding from the DAAD RISE Worldwide programme to offer a German undergraduate an internship at the Ruder Boskovic Institute (after I got the position at INFN, the location of the internship is moved to INFN Unit Trieste) under my supervision (reference code HR-PH-4248). The funding was conferred upon the evaluation of a project of training and research work on "Entanglement and non-locality in systems of identical particles".
- Since 2019, July 1st** Competitive Fellowship Marie-Sklodowska-Curie COFUND Fellini (grant agreement No. 754496) funded partly by European Union and partly by INFN (Italian national institute of nuclear physics). Title of the project "Quantum equilibrium thermal machines". Budget (on top of salary): 39600 euros.
- 2018, November 5th - December 4th** Competitive funding from the Ruder Boskovic Institute for short-term visits abroad (30 days, the largest fundable period), at the University of L'Aquila, upon evaluation of a research project on entanglement generation with nonlinear quantum optics using two-dimensional media (funding number 01-4662/22018.lu).
- 2018, August 10th - 2019, April 15th** Principal investigator of a competitive funding from the US Army International Technological Center-Atlantic (Grant number W911NF-18-1-0320) for the organisation of the workshop "Modern aspects of quantum

theory” held at the Ruder Boskovic Institute in Zagreb from 2018, October 1st to 2018, October 5th (website <http://maqp.irb.hr/>).

**2018, March 3rd -
November 14th**

Participation in the funding from Croatian Ministry of Science and Education (Grant number 402-07/18-09/00249) as co-organiser of the workshop “Modern aspects of quantum theory” held at the Ruder Boskovic Institute in Zagreb from 2018, October 1st to 2018, October 5th (website <http://maqp.irb.hr/>).

**2017, March 14th -
2019, January 31st**

Participation in the European project H2020 CSA Twinning No. 692194, “RBI-T-WINNING”. Research activity in entanglement in systems of identical particles, collaboration and event organisation with other nodes of the project.

2017, March 12th

I won the competitive Fellowship Sêr Cymru II / Marie-Skłodowska-Curie COFUND funded partly by European Union and partly by the Aberystwyth University. Title of the project “Quantum Information with Identical Particles (QIIP)”.

**2013, October 1st -
2017 March 10th**

Participation in the projects of the Slovenian Research Agency J1-5439 “Integrability and ergodic theory of unbalanced quantum many-body systems”, J1-7259 “The many-impurity problem”, and N1-0025 “Open Many-body Non-Equilibrium Systems” (OMNES). Research activity in characterisation of quantum non-equilibrium steady states of boundary/dissipation driven spin chains.

**2012, January 16th -
2013 July 31st**

Participation in the German projects Deutsche Forschungsgemeinschaft No. Bu 1337/8-1 “Coherent transport of waves in disordered systems with nonlinearity and interactions” and Evaluierter Fonds der Albert Ludwigs-Universität Freiburg No. 7441.4-4 “Spectral origin of decoherence in many body systems”. Research activity in entanglement and transport in systems of identical particles.

Habilitations and awards

2019, October 23th

I obtained the competitive funding for the DAAD RISE Worldwide program to offer a German undergraduate an internship at the Italian National Institute for Nuclear Physics (INFN) in summer 2020 (reference code IT-PH-4697). The funding was conferred upon the evaluation of a project of training and research work on “Emergence of non-equilibrium phase transitions in a quantum spin chain with boundary dissipation”. The project was suspended because of the emergency for the COVID-19 (Coronavirus) pandemic.

**2019, May 10th -
2025, May 10th**

Italian habilitation for associate professor within the academic recruitment field 02/A2 – theoretical physics of fundamental interactions:
<https://asn18.cineca.it/pubblico/miur/esito/02%252FA2/2/1>

2019, January 28th

I obtained the competitive Fellowship Marie-Skłodowska-Curie COFUND Fellini (grant agreement No. 754496) funded partly by European Union and partly by INFN (Italian national institute of nuclear physics). Title of

the project “Quantum equilibrium thermal machines”.

2018, October 24th

I obtained the competitive funding for the DAAD RISE Worldwide program to offer a German undergraduate an internship at the Ruder Boskovic Institute in summer 2019 (reference code HR-PH-4248). The funding was conferred upon the evaluation of a project of training and research work on “Entanglement and non-locality in systems of identical particles”.

2018, August 10th

I obtained the competitive funding from US Army International Technological Center-Atlantic (Grant number W911NF-18-1-0320) as Principal Investigator for the organisation of the workshop “Modern aspects of quantum theory” held at the Ruder Boskovic Institute in Zagreb from 2018, October 1st to 2018, October 5th (website <http://maqp.irb.hr/>) upon the evaluation of a proposal of the workshop (objectives, program, facilities, budget estimate).

2018, July 16th

I won the competition open to all Ph.D. students and post-doctoral fellows of the Ruder Boskovic Institute to obtain funds for short-term visits abroad (30 days, the largest fundable period) upon evaluation of a research project on entanglement generation with nonlinear quantum optics using two-dimensional media (funding number 01-4662/22018.lu). The visit was planned from 2018, November 5th to 2018, December 4th at the University of L'Aquila.

**2018, April 3rd -
2024, April 3rd**

Italian habilitation for associate professor within the academic recruitment field 02/B2 – theoretical physics of matter:
<https://asn16.cineca.it/pubblico/miur/esito-abilitato/02%252FB2/2/4>

2017, April 24th

Seal of Excellence Certificate delivered by the European Commission, as the institution managing Horizon 2020, the EU Framework Programme for Research and Innovation 2014-2020.

The project proposal 749102, QE-TherMa “Quantum equilibrium thermal machines” submitted under the Horizon 2020’s Marie Skłodowska-Curie actions call H2020-MSCA-IF-2016 of 14 September 2016 by Ugo Marzolino and the University of Trieste following evaluation by an international panel of independent experts was scored as a high-quality project proposal in a highly competitive evaluation process.

This proposal was recommended for funding by other sources since Horizon 2020 resources available for this specific call were already allocated following a competitive ranking.

Afterwards, this proposal was funded by a Marie Skłodowska-Curie COFUND fellowship.

2017, March 12th

I won the competitive Fellowship Sêr Cymru II / Marie-Skłodowska-Curie COFUND funded partly by European Union and partly by the Aberystwyth University. Title of the project “Quantum Information with Identical Particles (QIIP)”.

2016

Recognition of my Ph.D. degree by the Croatian Ministry.

2013-2017

Habilitation for teaching in Slovenian universities.

2012-2016

Liste de qualification (qualification list, equivalent to habilitation) for maître de conférences (equivalent to assistant professor) in French universities for Section 28 – Milieux denses et matériaux (Dense media and materials) and for Section 30 – Milieux dilués et optique (Diluted media and optics).

Teaching and supervising activities

**Academic
2020-2021,
semester**

**Year
1st**

Teacher of the course “Statistical mechanics” for the Master in Physics (1st year) at the University of Trieste. The course consists in 6 CFU – Crediti Formativi Universitari (equivalent to ECTS – European Credit Transfer and Accumulation System).

**Academic
2019-2020,
semester**

**Year
2nd**

Teacher of the course “Statistical mechanics” for the Master in Physics (1st year) at the University of Trieste. The course consists in 6 CFU – Crediti Formativi Universitari (equivalent to ECTS – European Credit Transfer and Accumulation System).

**2019, July 8th
September 29th**

- Supervision of the internship of the undergraduate student Till Jonas Friderick Johann, from the University of Heidelberg, under the DAAD RISE Worldwide programme (reference code of the funding HR-PH-4248) on “Entanglement and non-locality in systems of identical particles”.

2018, November

Lectures on entanglement theory, classical and quantum computational complexity within the course “Quantum Computation and Quantum Information” for the Ph.D. in “Mathematics and Models” (Department of Engineering, Information Science, and Mathematics) and “Physics and Chemistry” (Department of Physical and Chemical Sciences) at University of L’Aquila.

2018, April – May

Lectures on the theory of entanglement at the Ruder Boskovic Institute in Zagreb, open to students, post-docs and researchers from three research institutes in Zagreb (Ruder Boskovic Institute, Institute of Physics, University of Zagreb).

**2017, November
2018, February**

- Course “Complexity Classes in Classical and Quantum Computation” (20 hours) for Ph.D. students in Physics at the University of Trieste.

**2015, October
2016, July**

- Co-supervisor of the Master student Marko Ljubotina, in the group of Prof. Tomaž Prosen, at the University of Ljubljana, Faculty of Mathematics and Physics, on non-equilibrium steady states of quantum spin chains.

**Academic Year
2014-2015, 1st
semester**

Lectures on generalised Bose-Einstein condensation and condensation in low dimensions within the course of “Višja kvantna mehanika” (Advanced Quantum Mechanics) held by Prof. Tomaž Prosen for the Master in Physics (4th year) at the University of Ljubljana. The course consists in 5 ECTS (European Credit Transfer

and Accumulation System).

**2014, September
15th-19th**

Invited lectures on "Introduction to classical and quantum information" at the School "Advances in Quantum Information: Theory and Applications" held at the Mohammed V-Agdal University in Rabat, Morocco.

**Academic Year
2012-2013, 2nd
semester**

Tutor (teaching assistant) of the course "Experimentalphysik II" (Electromagnetism), held by Prof. Oliver Waldmann, for the Bachelor in Physics and for the Bachelor in Microsystems Engineering (1st year) at the Albert-Ludwigs University of Freiburg. The course consists in 8 ECTS (European Credit Transfer and Accumulation System). I contributed to plan homework exercises, correct them and give lectures on exercises.

**2012, September -
2013, July**

Co-supervisor of the Ph.D. student Dominik Hörndlein, in the group of Prof. Andreas Buchleitner, at the Albert-Ludwigs University of Freiburg, Institute of Physics, on entanglement and transport in solid state systems.

**2012, May - 2013,
February**

Co-supervisor of the Ph.D. student Hong-Bin Chen, visitor student in the group of Prof. Andreas Buchleitner, at the Albert-Ludwigs University of Freiburg, Institute of Physics, on quantum models for photosynthetic complexes.

**2012, April - 2013,
July**

Co-supervisor of the Ph.D. student Manuel Gessner, in the group of Prof. Andreas Buchleitner, at the Albert-Ludwigs University of Freiburg, Institute of Physics, on quantum correlations in noisy dynamics.

**Academic Year
2011-2012, 2nd
semester**

Tutor (teaching assistant) of the course of "Computational Complexity", held by Prof. David Gross, for the Master in Physics (4th year) at the Albert-Ludwigs University of Freiburg. The course consists in 10 ECTS (European Credit Transfer and Accumulation System). I contributed to plan homework exercises, correct them and give lectures on exercises. I also gave lectures on simulated annealing.

Invitations at congresses

**2014, September
15th-19th**

School "Advances in Quantum Information: Theory and Applications" held at the Mohammed V-Agdal University in Rabat, Morocco. Invited lecturer, lectures on "Introduction to classical and quantum information".

**2014, September
22th-26th**

Conference "Quantum Africa Conference 3: Advances in Quantum Sciences" held at the Mohammed-V Agdal University in Rabat, Morocco. Invited talk "Teleportation with identical particles".

Participations in schools

2019, February 18th - February 22th	Advanced School “Ubiquitous Quantum Physics: the New Quantum Revolution”, held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2017, August 21th-26th	“AAAS-TWAS Science Diplomacy Course”, held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2017, July 31th - August 4th	School “Fundamentals on Quantum Transport”, held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2017, June 26th - July 7th	First Zagreb School on Theoretical Physics, held at the Division of Theoretical Physics, Ruđer Bošković Institute in Zagreb, Croatia.
2014, September 15th-19th	School “Advances in Quantum Information: Theory and Applications” held at the Mohammed V-Agdal University in Rabat, Morocco. Invited lecturer, lectures on “Introduction to classical and quantum information”.
2011, February 14th-18th	School “New Trends in Quantum Dynamics and Quantum Entanglement” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2009, June 22th - July 3rd	Summer School “Trends and Developments in Linear Algebra” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2009, May 3rd-17th	QUROPE09 International school “Quantum Information and Many-Body Systems” in Cortona (AR), Italy. Poster contribution “Off-resonant entanglement generation beyond weak coupling”.
2008, July 1st-11th	International school of physics “Enrico Fermi” course CLXXI “Quantum Coherence in Solid State Systems” in Varenna (LC), Italy.

Participations in workshops

2020, September 10th-11th	“A First Training On Public Engagement”, online training course organised by INFN.
2020 February 24th-25th	First general meeting of the Fellini programme within Marie-Sklodowska-Curie actions, held at the Presidency of INFN (Italian national institute of nuclear physics) in Roma, Italy.
2020 February 6th-7th	Workshop of the INFN Research Network “QUANTUM – Finite and Infinite Quantum Systems” held at the University of Bologna, Italy. Contributed talk “Entanglement and indistinguishability”.
2020 January 20th-21th	Workshop “Quantum Technologies within INFN: status and perspectives” held at the University of Padova, Italy.
2019, November 27th-29th	“Science Dialogues: Training Course in Science Communication” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.

2019, August 12th - August 30th	College “Energy Transport and Energy Conversion in the Quantum” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2019, February 25th - March 1st	Workshop “Ubiquitous Quantum Physics: the New Quantum Revolution”, held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2017, December 11th-12th	Discussion meeting “Foundations of quantum mechanics and their impact on contemporary society”, held at the Royal Society in London. Poster contributions “Entanglement and (in)distinguishability” and “Quantum physics and contemporary philosophy”.
2017, August 7th-11th	Workshop “Fundamentals on Quantum Transport”, held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2016, November 11th	ICTP - Ljubljana condensed matter theory meeting, held at the University of Ljubljana.
2016, June 16th-19th	CEQIP2016 “13 th Central European Quantum Information Processing Workshop” held in Valtice, Czech Republic. Poster contribution “Entanglement and teleportation with identical particles”.
2015, October 10th-11th	“Convention Scuola 2015 - Incontrare ed educare l'umano - Il lavoro dell'insegnante” (Congress School 2015 - Meeting and educating the human - The work of teaching) in Bologna. Parallel workshops/teamworks on innovative teaching of different fields in schools. I participated in the teamwork on physics “Attrezzi e materiali per la progettazione di percorsi sulla fisica quantistica” (Tools and material to plan educational path of quantum physics).
2012, May 18th	“Andrejewski-Day - The mathematics of quantum transport” held at the Institute of Physics, Albert-Ludwigs University of Freiburg. Poster contribution “Entanglement of identical particles: mathematical structures and applications”.
2011, February 21th-25th	Workshop “New Trends in Quantum Dynamics and Quantum Entanglement” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2010, June 14th-18th	Workshop “Quantum Statistical Mechanics, Computational and Information” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2009, July 6th-10th	Advanced Workshop “Trends and Developments in Linear Algebra” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.
2008, June 19th-20th	Workshop “physics@UniTS - La Ricerca in Fisica nell'Università degli Studi di Trieste” (The Physics Research at the University of Trieste), Department of Physics, Department of Theoretical Physics and Department of Astronomy at the University of Trieste (TS),

Italy.

2007, December 3rd-6th Workshop “Open Problems in Quantum Mechanics” in Bertinoro (FC), Italy. Talk “Phase transitions of bipartite entanglement”.

Participations in conferences

2020, February 12th - 14th “Basel Quantum Metrology and Sensing Conference” held at the University of Basel. Poster contribution “Precision magnetometry exploiting excited-state quantum phase transitions in the Lipkin-Meshkov-Glick model”.

2019, September 23th - 27th “150th National Congress of the Italian Physical Society” held at Gran Sasso Science Institute in L’Aquila, Italy. Talk contribution “Entanglement and indistinguishability”.

2019, July 29th - August 1st Conference “Taming Non-Equilibrium Systems: from Quantum Fluctuation to Decoherence” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.

2019, April 29th - May 4th Conference “Quantum Measurement: Fundamentals, Twists, and Applications” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.

2019, March 10th-15th “83rd Annual Meeting of the DPG (Deutsche Physikalische Gesellschaft – German Physical Society) and the DPG Spring Meeting of the Section on Atomic, Molecular, and Plasma Physics and Quantum Optics (SAMOP)” held in Rostock, Germany.

2017, October 23th-27th Conference “Weyl Fermions in Material” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy. Poster contribution “Entanglement and (in)distinguishability”.

2017, October 3rd-6th “3rd International Conference for Young Quantum Information Scientists (YQIS)” held at the Max Planck Institute for the science of light and at Friedrich-Alexander-Universität Erlangen-Nürnberg in Erlangen, Germany. Poster contribution “Entanglement and (in)distinguishability”.

2017, September 12th-15th “Italian Quantum Information Science Conference IQIS 2017” held at Firenze, Italy. Talk contribution “Fisher information approach to non-equilibrium phase transitions in quantum XXZ spin chain with bound noise”.

2017, July 10th-14th Conference “Many-Body Localization: Advances in the Theory and Experimental Progress” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste.

2015, September 10th-12th “Italian Quantum Information Science Conference IQIS 2015” held at Monopoli (BA), Italy. Talk contribution “Sensitivity and complexity of non-equilibrium steady states of quantum spin

chains”.

2015, June 29th-July 1st

“XX convegno nazionale di fisica statistica e dei sistemi complessi” (XX national conference of statistical physics and complex systems) held at the University of Parma, Italy. Talk contribution “Computational complexity of non-equilibrium steady state of quantum spin chains”.

2014, October 9th-11th

“Quantum and classical chaos: What comes next?” Symposium in honour of Prof. Marko Robnik on the occasion of his 60th birthday, held in Ljubljana.

2014, September 22th-26th

“Quantum Africa Conference 3: Advances in Quantum Sciences” held at the Mohammed-V Agdal University in Rabat, Morocco. Invited talk “Teleportation with identical particles”.

2010, September 11th-14th

“International Iran Conference on Quantum Information 2010” held in Kish Island, Iran. Talk contribution “Sub-shot-noise quantum metrology with entangled identical particles”.

2009, November 5th-8th

“Italian Quantum Information Science Conference 2009” held at Scuola Normale Superiore (SNS), Pisa, Italy. Poster contribution “Entanglement and Fisher information: identical particles vs. distinguishable qubits”.

2008, October 24th-29th

“Italian Quantum Information Science Conference, IQIS 2008” held at the University of Camerino (MC), Italy. Poster contribution “Beyond ergodic averaged weak coupling in open quantum systems”.

Seminars

2018, December 17th

Seminar “Entanglement and (in)distinguishability” at the Institute of Physics at the University of Freiburg “Albert-Ludwigs”.

2018, May 15th

Seminar “Entanglement and (in)distinguishability” at the Department of Physics and Chemistry at the University of L’Aquila.

2018, May 10th

Seminar “Entanglement and (in)distinguishability” at the Department of Physics and Chemistry at the University of Palermo.

2018, April 11th

Seminar “Quantum Fisher information of thermal states and non-equilibrium steady states: quantum metrology and phase transitions” at the Institute of Theoretical and Computational Physics at the University of Graz.

2018, January 26th

Seminar “Quantum correlations with systems of identical particles and applications” at the Division of Theoretical Physics at the Ruder Boskovic Institute in Zagreb.

2017, January 9th

Seminar “Quantum Fisher information of thermal states and non-equilibrium steady states: quantum metrology and phase transitions” at the Department of Physics, University of L’Aquila.

- 2016, September 7th** Seminar “Quantum information in many-body physics” at the Max-Planck Institute of Quantum Optics in Garching, München, Germany.
- 2016, April 13th** Seminar “Quantum enhanced measurements with thermal states and nonequilibrium steady states” at the Department of Physics, University of Parma.
- 2014, October 22th** Seminar “Statistical mechanics of entanglement” at the Universidad Autonoma de Barcelona.
- 2014, March 18th** Seminar “Precision measurements of temperature and chemical potential of quantum gases” at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste.
- 2013, November 26th** Seminar “Entanglement benchmarked transport in fermion systems” at the Laboratoire Traitement et Communication de l'information, CNRS – Télécom ParisTech in Paris.
- 2013, June 18th** Seminar “Quantum information with identical particles” at the Department of Physics, University of Ljubljana.
- 2013, May 29th** Seminar “Quantum information with identical particles” at the Institute of Atomic and Subatomic Physics, University of Technology in Vienna.
- 2013, April 23th** Seminar “Quantum metrology with identical particles” at the Department of Physics, University of Basel.
- 2013, February 14th** Seminar “Entanglement of identical particles and its applications” at the Department of Physics of the Université Henri Poincaré Nancy I, Nancy.
- 2012, December 5th** Journal Club “Entanglement of identical particles and its applications” at the LPT (Laboratoire de Physique Théorique) of the Université Paul Sabatier Toulouse III, Toulouse.
- 2012, July 11th** Seminar “Entanglement of identical particles: theory and possible applications” at the Institute of Theoretical Physics, University of Heidelberg.
- 2012, February 27th** Seminar “Entanglement of identical particles: theory and applications” at the Institute of Physics, Albert-Ludwigs University of Freiburg.
- 2011, December 16th** Journal Club “Entanglement of identical particles: theory and applications” at SISSA (Scuola Internazionale di Studi Superiori Avanzati), Trieste.
- 2011, December 13th** Seminar “Entanglement of identical particles: mathematical characterizations and practical applications” at the Université Paul Sabatier Toulouse III, Toulouse.
- 2010, December 7th** Seminar “Sub-shot-noise quantum metrology with entangled identical particles” at SISSA (Scuola Internazionale di Studi

Superiori Avanzati), Trieste.

- 2010, November 15th** Seminar “Sub-shot-noise quantum metrology with entangled identical particles”, at the Department of Theoretical Physics I, Universidad Complutense de Madrid.
- 2010, October 7th** Seminar “Sub-shot-noise quantum metrology with entangled identical particles”, at the Institute of Physics, Albert-Ludwigs University of Freiburg.
- 2010, March 25th** Seminar “Reconstruction of Master Equations Parameters through symplectic tomographic”, at the Department of Physics, University of Trieste.
- 2010, February 12th** Seminar “Sub-shot-noise quantum metrology with entangled identical particles”, at the Department of Physics, University of Basel.
- 2009, March 11th** Seminar “Beyond ergodic averaged weak coupling in open quantum systems”, at the Department of Theoretical Physics, University of Trieste.

Publications

1. Fabio Benatti, Roberto Floreanini, Fabio Franchini, Ugo Marzolino: *Entanglement in indistinguishable particle systems*, Phys. Rep. **878**, 1 (2020) upon invitation, arXiv:2007.06253.
2. Daniel Braun, Gerardo Adesso, Fabio Benatti, Roberto Floreanini, Ugo Marzolino, Morgan Mitchell, Stefano Pirandola: *Quantum enhanced measurements without entanglement*, Rev. Mod. Phys. **90**, 035006 (2018) upon invitation, arXiv:1701.05152.
3. Fabio Benatti, Roberto Floreanini, Fabio Franchini, Ugo Marzolino: *Remarks on entanglement and identical particles*, Open. Sys. Inf. Dyn. **24**, 1740004 (2017), arXiv:1709.05520.
4. Ugo Marzolino, Tomaž Prosen: *Fisher information approach to non-equilibrium phase transitions in quantum XXZ spin chain with boundary noise*, Phys. Rev. B **96**, 104402 (2017), arXiv:1708.07121.
5. Ugo Marzolino, Tomaž Prosen: *Erratum: Quantum metrology with non-equilibrium steady states of quantum spin chains [Phys. Rev. A 90, 062130 (2014)]*, Phys. Rev. A **94**, 039903 (2016).
6. Ugo Marzolino, Tomaž Prosen: *Computational complexity of non-equilibrium steady states of quantum spin chains*, Phys. Rev. A **93**, 032306 (2016), arXiv:1601.08066.
7. Ugo Marzolino, Andreas Buchleitner: *Performances and robustness of quantum teleportation with identical particles*, Proc. R. Soc. A **472**, 2015.0621 (2016), arXiv:1512.02692.
8. Ugo Marzolino, Daniel Braun: *Erratum: Precision measurements of the temperature and the chemical potential of quantum gases [Phys. Rev. A 88, 063609 (2013)]*, Phys. Rev. A **91**, 039902 (2015).
9. Ugo Marzolino, Andreas Buchleitner: *Quantum teleportation with identical particles*, Phys. Rev. A **91**, 032316 (2015), arXiv:1502.05814.

10. Ugo Marzolino, Tomaž Prosen: *Quantum metrology with non-equilibrium steady states of quantum spin chains*, Phys. Rev. A **90**, 062130 (2014), arXiv:1412.1977.
11. Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Entanglement in fermion systems and quantum metrology*, Phys. Rev. A **89**, 032326 (2014), arXiv:1403.1144.
12. Ugo Marzolino: *Entanglement in dissipative dynamics of identical particles*, Europhys. Lett. **104**, 40004 (2013), arXiv:1311.7592.
13. Ugo Marzolino, Daniel Braun: *Precision measurements of the temperature and the chemical potential of quantum gases*, Phys. Rev. A **88**, 063609 (2013), arXiv:1308.2735.
14. Ugo Marzolino, Salvatore Marco Giampaolo, Fabrizio Illuminati: *Frustration, entanglement, and correlations in quantum many body systems*, Phys. Rev. A **88**, 020301 (2013) Rapid Communication, arXiv:1302.6251.
15. Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Entanglement robustness and geometry in systems of identical particles*, Phys. Rev. A **85**, 042329 (2012), arXiv:1204.3746.
16. Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Bipartite entanglement in systems of identical particles: the partial transposition criterion*, Ann. Phys. **327**, 1304 (2012), arXiv:1202.2993.
17. Giuseppe Argentieri, Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Entangled identical particles and noise*, Int. J. Quantum Inf. **9**, 1745 (2011), Special Issue on Quantum Correlations: Entanglement and beyond, arXiv:1107.5071.
18. Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Entanglement and squeezing with identical particles: ultracold atom quantum metrology*, J. Phys. B **44**, 091001 (2011), arXiv:1009.0995.
19. Bruno Bellomo, Antonella De Pasquale, Giulia Gualdi, Ugo Marzolino: *Reconstruction of time-dependent coefficients: a check of approximation schemes for non-Markovian convolutionless dissipative generators*, Phys. Rev. A **82**, 062104 (2010), arXiv:1007.4537.
20. Bruno Bellomo, Antonella De Pasquale, Giulia Gualdi, Ugo Marzolino: *A tomographic approach to non-Markovian master equation*, J. Phys. A **43**, 395303 (2010), arXiv:1005.4572.
21. Paolo Facchi, Giuseppe Florio, Ugo Marzolino, Giorgio Parisi, Saverio Pascazio: *Classical statistical mechanics approach to multipartite entanglement*, J. Phys. A **43**, 225303 (2010), arXiv:1002.2592.
22. Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Sub-shot-noise quantum metrology with entangled identical particles*, Ann. Phys. **325**, 924 (2010), arXiv:1001.3313.
23. Paolo Facchi, Giuseppe Florio, Ugo Marzolino, Giorgio Parisi, Saverio Pascazio: *Multipartite entanglement and frustration*, New J. Phys. **12**, 025015 (2010), arXiv:0910.3134.
24. Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Entangling two unequal atoms through a common bath*, Phys. Rev. A **81**, 012105 (2010), arXiv:0912.0354.
25. Bruno Bellomo, Antonella De Pasquale, Giulia Gualdi, Ugo Marzolino: *Reconstruction of Markovian Master Equation parameters through a tomographic approach*, Phys. Rev. A **80**, 052108 (2009), arXiv:0909.2250.
26. Fabio Benatti, Roberto Floreanini, Ugo Marzolino: *Environment induced entanglement in a refined weak-coupling limit*, Europhys. Lett. **88**, 20011 (2009), arXiv:0910.4021.
27. Paolo Facchi, Giuseppe Florio, Ugo Marzolino, Giorgio Parisi, Saverio Pascazio: *Statistical mechanics of multipartite entanglement*, J. Phys. A **42**, 055304 (2009), arXiv:0803.4498.

28. Paolo Facchi, Ugo Marzolino, Giorgio Parisi, Saverio Pascazio, Antonello Scardicchio: *Phase transitions of bipartite entanglement*, Phys. Rev. Lett. **101**, 050502 (2008), arXiv:0712.0015.

Preprints

- ✓ Qian Wang, Ugo Marzolino: *Precision magnetometry using excited-state quantum phase transitions*, submitted to npj Quantum Inf.
- ✓ Till Jonas Friderick Johann, Ugo Marzolino: *Locality and entanglement of indistinguishable particles*, submitted to Phys. Rev. Lett.
- ✓ Ugo Marzolino: *μ PT statistical ensemble: systems which exchange energy, particles, and volume*, submitted to J. Phys. Chem. C

Work in progress

- ✓ Domink Hörndlein, Ugo Marzolino, Vivian V. Franca, Andreas Buchleitner: *Entanglement benchmarked transport*.
- ✓ Ugo Marzolino: *Pedagogical note on Bose-Einstein condensation in effectively low dimensions*.

Referee activity for the following journals

Since 2013, January	Journal of Physics B: Atomic, Molecular and Optical Physics Open Systems & Information Dynamics
Since 2013, March	Physical Review A Nature Communications
Since 2013, April	New Journal of Physics Physical Review Letters
Since 2013, May	Journal of Physics A: Mathematical and Theoretical
Since 2013, November	Zeitschrift für Naturforschung A
Since 2014, August	International Journal of Theoretical Physics
Since 2014, December	Physical Review E
Since 2015, March	Annalen der Physik
Since 2016, January	Scientific Reports
Since 2016, February	Physical Review B
Since 2017, January	Journal of Physics: Condensed Matter
Since 2017, June	Laser Physics Letters

Since 2018, May	Entropy
Since 2018, July	Heliyon
Since 2019, October	European Physical Journal Plus
Since 2020, February	Physics Letters A
Since 2020, June	Physics Review Research
Since 2020, July	Physics Review X Quantum

Editorial activity

Since 2019, July	Editorial Board Member of the journal <i>Quantum Reports</i> published by MDPI: https://www.mdpi.com/journal/quantumrep
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Organiser activity

2020, September 28th - October 2nd	<p>I'm organising, together with Dr. Iris Agresti, Dr. Claudia Benedetti, Dr. Mario Collura, Dr. Ilaria Gianani, and Dr. Francesco Pepe, the "Young Italian Quantum Information Science Conference 2020" (YIQIS2020), to be held online, supported by Eurotech and Planetek. Website and social media: https://agenda.infn.it/e/yiqis2020 https://twitter.com/yiqis2020 https://www.facebook.com/YIQIS-2020-107659611038875</p> <p>This event was conceived in substitution of the "Italian Quantum Information Science Conference IQIS 2020", that I was organising together with Prof. Rosario Fazio and Dr. Mario Collura, and that was suspended due to the COVID-19 (Coronavirus) pandemic.</p>
2019, March 15th	<p>Organiser, together with Prof. Daniel Braun and Prof. Piet Schmidt, the symposium "Novel Perspectives in Quantum Metrology" proposed and selected at the 83rd Annual Meeting of the Deutsche Physikalische Gesellschaft (DPG - German Physical Society) and the DPG-Frühjahrstagung (Spring Meeting) of the Section on Atomic, Molecular, and Plasma Physics and Quantum Optics (SAMOP) in Rostock, Germany. Website: http://rostock19.dpg-tagungen.de/ http://rostock19.dpg-tagungen.de/programm/symposien https://www.dpg-verhandlungen.de/year/2019/conference/rostock/part/syqm?lang=en</p>
2018, October 1st-5th	Organiser, together with Dr. Fabio Franchini, of the workshop "Modern aspects of quantum theory" held at the Ruder Boskovic Institute in Zagreb, supported by the European fund H2020 CSA

Twinning project No. 692194 “RBI-T-WINNING”, by the Croatian Ministry of Science and Education (Grant number 402-07/18-09/00249), by the US Army International Technological Center-Atlantic (Grant number W911NF-18-1-0320), and by the Croatian Science Foundation HrZZ (project number IP-2016-6-3347). Website: <http://maqp.irb.hr/>.

2012, February - July

Organiser of the series of weekly quantum information meetings in the group of Prof. Andreas Buchleitner, at the Institute of Physics of the Albert-Ludwigs University of Freiburg.

2010, February 25th - June 17th

Organiser of the series of weekly seminars of the Theoretical Physics sector of the Department of Physics of the University of Trieste.

Memberships

2008-2010

INFN – Istituto Nazionale di Fisica Nucleare (Italian National Institute of Nuclear Physics)

2010

SIF – Società Italiana della Fisica (Italian Physical Society)

2019

SIF – Società Italiana della Fisica (Italian Physical Society)

Outreach

2020, September 10th-11th

Attendance at “A First Training On Public Engagement”, online training course organised by INFN.

2019, November 27th-29th

Attendance at “Science Dialogues: Training Course in Science Communication” held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.

2018, November 24th

I was interviewed for the article “MAMMA MIA! Otkud osam Talijana u najvećoj hrvatskoj znanstvenoj ustanovi?” (“MAMMA MIA! How about eight Italians in the largest Croatian scientific institution?”) written by the journalist Tanja Rudez and published in the Croatian newspaper Jutarnji List on 24/11/2018, and online on 25/11/2018: <https://www.jutarnji.hr/magazin/mamma-mia-otkud-osam-talijana-u-najvecoj-hrvatskoj-znanstvenoj-ustanovi/8093039/>

2018, October 25th

Press release from Ruder Boskovic Institute PR officers on my paper *Rev. Mod. Phys.* **90**, 035006 (2018): <https://www.irb.hr/eng/Izdvojeno/Novel-theoretical-proposals-for-quantum-enhanced-measurements>
<https://www.linkedin.com/feed/update/urn:li:activity:6461231180254711809>
<https://www.facebook.com/irb.hr/posts/2465500130141444>

2017, December 22th

I was interviewed for the article “Viele Holzwege führen nach Rom” (“Many wood paths lead to Rome”) written by the journalist Mahya

Karbalaii for Frankfurter Allgemeine Zeitung (FAZ):

<http://blogs.faz.net/blogseminar/viele-holzwege-fuehren-nach-rom/>

2017, August 21th-26th Attendance at “AAAS-TWAS Science Diplomacy Course”, held at the Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste, Italy.

2015, October 10th-11th Attendance at “Convention Scuola 2015 – Incontrare ed educare l'umano – Il lavoro dell'insegnante” (Congress School 2015 – Meeting and educating the human – The work of teaching) in Bologna. Parallel workshops/teamworks on innovative teaching of different fields in schools. I participated in the teamwork on physics “Attrezzi e materiali per la progettazione di percorsi sulla fisica quantistica” (Tools and material to plan educational path of quantum physics).

I'm interested and active in discussing basic aspects of quantum mechanics in high schools.

Languages

- ✓ Italian: native
- ✓ English: excellent

Computer skills

- ✓ OS: Linux, Unix, Mac, Windows.
- ✓ Programming languages: C, Fortran, Pascal.
- ✓ Applications: office applications (Microsoft and open-source) and Latex, Mathematica, Root, Paw, Gnuplot, graphic applications (GIMP, Inkscape, Photoshop, Illustrator).

Data

12/09/2020

Luogo

Trieste