

## ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO

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## Matteo Bina CURRICULUM VITAE

(N.B. IL CURRICULUM NON DEVE ECCEDERE LE 30 PAGINE E DEVE CONTENERE GLI ELEMENTI CHE IL CANDIDATO RITIENE UTILI AI FINI DELLA VALUTAZIONE.

LE VOCI INSERITE NEL FACSIMILE SONO A TITOLO PURAMENTE ESEMPLIFICATIVO E POSSONO ESSERE SOSTITUITE, MODIFICATE O INTEGRATE)

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

COGNOME	BINA
NOME	MATTEO
DATA DI NASCITA	01/09/1982

### Work Experience

**Temporary Teacher (Mathematics)**, *Milano*, Liceo Scientifico Donatelli-Pascal. Period: from 21/09/2022 to today.

**Application Engineer**, *Reggio Emilia*, Applied Materials Italia. Period: from 03/06/2019 to 03/06/2022.

**Post-doc position funded by Università degli Studi di Milano**, *Milano*, Title of the project: "Strongly coupled systems and non-classical states as resources for quantum technologies".

Supervisor: Prof. Matteo G. A. Paris. Period: from 01/06/2015 to 31/05/2019.

**Post-doc**, *Università degli Studi di Milano*, Funded by the project FIRB "LiCHIS" RBFR10YQ3H .

Supervisor: Dr. Stefano Olivares. Period: from 01/02/2013 to 31/01/2015.

**Post-doc**, *Università degli Studi dell'Insubria*, Funded by the program UNIRE (Università degli Studi dell'Insubria e Regione Lombardia), strumento DRA (Dote Ricerca Applicata) for the project BAGI "Biomedical Applications for Ghost Imaging". Supervisor: Prof. Fabio Ferri. Period: from 01/04/2011 to 31/01/2013.

### Academic Education

**PhD in Physics**, *Università degli Studi di Milano*.

Thesis: Open Quantum Systems Dynamics within and beyond the Jaynes-Cummings Model Supervisor: Prof. Federico Casagrande. Date: 13/12/2010

**Master degree in Physics**, *Università degli Studi di Milano*, 110/110 cum Laude. Thesis: Analytical solution of the dynamics of a tripartite system in Cavity QED: entanglement and decoherence.  
Supervisor: Prof. Federico Casagrande. Date: 11/07/2007

**Bachelor degree in Physics**, *Università degli Studi di Milano*, 110/110 cum Laude. Thesis: Massive black holes in galaxies.  
Supervisor: Prof. Giuseppe Bertin. Date: 25/02/2005

## National Scientific Qualification (ASN, Abilitazione Scientifica Nazionale)

Obtained on 27/01/2022. Settore scientifico disciplinare FIS/03. Settore concorsuale 02/B2 Fisica Teorica della Materia

## Teaching Activity

- **April 2019, Course: Quantum Optics**, *Queen's University Belfast*. "ERASMUS+ - Staff Mobility for Teaching - 2018/2019". **32 hours** of frontal lectures to PhD and Master students.
- **2018-2019, Course: Classical Mechanics**, *Physics Department - Università degli Studi di Milano*.  
**60 hours** of frontal lectures, exercises and written/oral exams. (**20 hours** as "Professore a contratto" + **40 hours** as "Attività didattica integrativa, art. 45")
- **2017-2018, Course: Classical Mechanics**, *Physics Department - Università degli Studi di Milano*.  
**60 hours** of frontal lectures, exercises and written/oral exams. (**20 hours** as "Professore a contratto" + **40 hours** as "Attività didattica integrativa, art. 45")
- **2016-2017, Course: Classical Mechanics**, *Physics Department - Università degli Studi di Milano*. **50 hours** of frontal lectures, exercises and written/oral exams. (**20 hours** as "Professore a contratto" + **30 hours** as "Attività didattica integrativa, art. 45")
- **2015-2016, Course: Physics Laboratory I**, *Physics Department - Università degli Studi di Milano*.  
Assistance in laboratory activities and exams for 1st year students in Physics - **80 hours**
- **2015-2016, Course (PhD School): Quantum Coherent Phenomena**, *Physics Department - Università degli Studi di Milano*.  
Frontal lectures to 1st year PhD students - **4 hours**
- **2013-2014, Course (PhD School): Advanced Quantum Optics**, *Physics Department - Università degli Studi di Milano*.  
Frontal lectures to 1st year PhD students - **4 hours**
- **2012-2013, Course: Quantum Optics and Quantum Information Theory**, *Physics Department - Università degli Studi di Milano*.  
Frontal lectures to Master students - **15 hours**
- **2010-2011, Teaching assistant for student preparation for the placement examination of scientific faculties**, *Università degli Studi di Milano*.  
Frontal lectures - **30 hours**
- **2009-2010, Course: Thermodynamics**, *Physics Department - Università degli Studi di Milano*.  
**20 hours** of frontal lectures, exercises and written/oral exams

## Mentoring Bachelor/Master students

- 2017 **Federico Grasselli**, *Università degli Studi di Milano*.  
**Co-supervisor** of Master Degree thesis - Title: Probing the spectral density of structured environments.
- 2016 **Marco Cattaneo**, *Università degli Studi di Milano*.  
**Co-supervisor** of Bachelor Degree thesis - Title: Quantum key distribution with coherent states and photon-number-resolving detectors.
- 2014 **Ivan Amelio**, *Università degli Studi di Milano*.  
**Co-supervisor** of Bachelor Degree thesis - Title: Quantum estimation in Dicke-like critical systems.
- 2014 **Andrea Rebolini**, *Università degli Studi di Milano*.  
**Co-supervisor** of Master Degree thesis - Title: Open-system dynamics of ultra-strongly coupled systems.
- 2013 **Stefano Maffezzoli Felis**, *Università degli Studi di Milano*. **Co-supervisor** of Master Degree thesis - Title: Superconducting qubits coupled through a resonator within the quantum Rabi model framework.

## Awards and Fundings

2013 **ERASMUS+ - Staff Mobility for Teaching Grant**, *Lectures series on Quantum Optics*, Queen's University Belfast.

2009 **Erasmus Student Placement Grant**, *Universidad del País Vasco, Spain*, "Lifelong Learning Programme - Erasmus Placement".

Local Supervisor: Prof. Enrique Solano

## Participation to National and European projects

I have been part of the Working Groups in the following National and European projects.

- 2019-2022, EU H2020 FET Open Project "IQubits", Grant Agreement N. 829005
- 2016-2018, TEAM project Quantum Optical Communication Systems Foundation for Polish Science
- 2015-2017, Transition Grant H2020 14-63008000-625 - UniMI
- 2015-2018, QuProCS - Quantum Probes for complex systems, EU H2020 FET PROACTIVE 641277
- 2012-2014, LiCHIS - Light Correlations for High-precision Innovative Sensing, MIUR - FIRB RBF10YQ3H
- 2011-2012, Programma UNIRE, Progetto BAGI - Biomedical Applications for Ghost Imaging, DRA\_SCICO6 - Uninsubria
- 2009-2011, INQUEST - Quantum estimation from incomplete data, MAE (Italy - Slovakia)
- 2009, SIN.PHO.NANO - Development, analysis and characterization of a single- photon source based on semiconductor nanocrystals 2009-ATE-0461, P.U.R. competitivi - UniMI
- 2008, QUANTUM OPTICS and COHERENT PHENOMENA 2008-ATE-0093, P.U.R. - UniMI

## Conference Organization

- 9-12 Sep 2019 - Italian Quantum Information Science Conference (IQIS'19) - Physics Department, Università degli Studi di Milano. Member of the local organizing committee.
- Oct-Dec 2018 - QTLab Fall Workshop - Physics Department, Università degli Studi di Milano. Chairpersons: Matteo Bina and Claudia Benedetti.
- Mar 2016 - 1st QuProCS Meeting - Sala Napoleonica, Università degli Studi di Milano. Member of the local organizing committee.

## Research Activity

### **Applied Materials Italia - MDLx (2019 - 2022) - MULTISCALE SIMULATION OF MODERN LOGIC AND MEMORY DEVICES**

Development of physical models for the proprietary TCAD software Ginestra® for simulation of nano-scaled electronic devices (Logic and memory devices, analysis of variability, Degradation models such as breakdown/ Silc / BTI). It is worth mentioning the activity related to the European FET Open Project "IQubits", the main topic of which is the design, simulation and measurements of qubits and quantum operations based on Si and SiGe quantum dots in FDSOI MOSFETs.

### **Post-Doc (2015 - 2019) - THEORETICAL RESEARCH ON STRONGLY COUPLED SYSTEMS AND NON-CLASSICAL STATES AS RESOURCES FOR QUANTUM TECHNOLOGIES:**

- Study of **quantum probes**, both in the continuous- and discrete-variable regimes, for the **estimation** of parameters characterizing **structured Ohmic environments**. In particular: estimation of the cutoff frequency of the non-trivial spectral density and temperature of the environment [26,27,29,30]. Quantum metrology applied to quantum critical systems [31].
- Study of **non-classicality** and **non-Gaussianity** of quantum states engineered by means of non-deterministic noiseless linear amplifiers [28].
- Characterization of **many-body superradiant systems**, focused on the connection between quantum criticality and the possibility of locally **estimating the coupling constant** by probing only a portion of the whole system. In particular, Dicke-like superradiant systems made of an ensemble of two-level atoms interacting with a single-mode radiation field at zero effective temperature, have been considered [20].
- Study of the diamagnetic  $A^2$ -term in the Hamiltonian Dicke model for superradiance from the perspective of **quantum discrimination** and **quantum estimation theory** [23].
- Study on the significance of **fidelity** as a figure of merit in quantum state reconstruction of **discrete-** (DV) and **continuous-variable** (CV) quantum optical systems, experimentally validated. The use of fidelity in quantum **homodyne tomography** of CV states and maximum-likelihood polarization tomography of DV ones, is analyzed focusing attention on non-classicality, entanglement, and quantum discord as a function of fidelity to a target state [22].
- Study and proposal of a **discrimination protocol** using coherent states of light with opposite phases, in the presence of **phase noise** and with the employment of **photon number resolving (PNR) detectors** performing a homodyne-like detection scheme [24,25]. **Numerical simulations and experimental validation**, in collaboration with the Quantum Optics Lab at the Science and High Technology Department of Università degli Studi dell'Insubria.

### **Post-Doc (2013-2015) - THEORETICAL RESEARCH ON OPTICAL CORRELATIONS FOR HIGH-PRECISION MEASUREMENT TECHNIQUES:**

- Study of **classical and quantum correlations** in interferometric systems for different states of the optical radiation [17].
- Proposal of a protocol for the **estimation of the relative phase** between a light signal and a reference laser beam at the inputs of a beam splitter, in an interferometric scheme usually employed for **quantum communication** [21].
- **Numerical simulations and experimental validation**, in collaboration with the Quantum Optics Lab at the Science and High Technology Department of Università degli Studi dell'Insubria.
- Study on theoretical models for the strong and **ultra-strong interaction** between radiation and matter in superconducting circuits and quantum simulators, in collaboration with Universidad del País Vasco (Bilbao) [16].
- Analysis of the **fidelity** as a “good” figure of merit for the effectiveness in a protocol of quantum states reconstruction, in relation with entanglement and non-classical properties of the state to be reconstructed [14,15].
- Study of the interaction between a **micromechanical oscillator** and a two-level system in the strong detuning regime, leaking to an external dissipative environment for the generation of **squeezing** at steady state [18] (in collaboration with Queen’s University of Belfast and Imperial College of London).
- Study of the dissipative dynamics of a single mode of the electromagnetic radiation in a **non-Markovian** and highly noisy environment, characterized by classical stochastic fluctuating fields. Characterization of the **decoherence times** (and potential **coherence revivals**) of a highly entangled initial state, through a comparative analysis of different non-classicality criteria [19].

**Post-Doc (2011-2013) - EXPERIMENTAL ACTIVITY ON THE GHOST IMAGING TECHNIQUE IN DIFFUSIVE MEDIA**

- Experimental study for the applications of **Ghost Imaging** techniques to the reconstruction of transmission profiles of absorbing objects immersed in turbid media. Comparative study of the standard imaging techniques commonly employed in biomedics, in order to propose a potentially innovative method for the imaging in biological tissues [13].
- Experimental study for the characterization of the **photon free mean path length distribution in turbid media** by means of spectral intensity correlations of speckle fields [9].

**PhD (2007-2010) - THEORETICAL RESEARCH ON OPEN QUANTUM SYSTEM DYNAMICS IN CAVITY QED AND CIRCUIT QED, DYNAMICS OF ENTANGLEMENT AND DECOHERENCE:**

- Development of a theoretical model for the encoding of **entangled states** in two-level atoms inside microwave cavities, whose electronic transition is strongly driven by external lasers. The dynamics of this system is studied in the presence of an interaction with a **dissipative environment** and **decoherence-free quantum states** are found [1,2,3,4,5].
- Study of a protocol for the **transfer of entangled states** of radiation to atomic states, in Cavity QED systems [6,7,8,10].
- Study of the open dynamics of integrated **superconducting qubits** ultra-strongly coupled to monodimensional waveguides for the transmission of microwave fields [12] (in collaboration with Universidad del País Vasco, Bilbao).

## Publications

Author of **33** papers published on international peer-reviewed journals, **18** as **first author** and **2** conference proceedings (Total citations: **581**; h-index: **14**; source: **WoS**).

### International peer-reviewed journals

- [33] *Noisy propagation of Gaussian states in optical media with finite bandwidth*, Berihu Teklu, Matteo Bina, and Matteo G. A. Paris, Sci. Rep 12, 11646 (2022)
- [32] *Toward Hole-Spin Qubits in Si p-MOSFETs within a Planar CMOS Foundry Technology*, L. Bellentani, M. Bina, S. Bonen, A. Secchi, A. Bertoni, S. P. Voinigescu, A. Padovani, L. Larcher, and F. Troiani, Phys. Rev. Applied 16, 054034 (2021)
- [31] *Critical Quantum Metrology with a Finite-Component Quantum Phase Transition*, L. Garbe, M. Bina, A. Keller, M. G. A. Paris, and S. Felicetti, Phys. Rev. Lett. 124, 120504 (2020)
- [30] *Two-qubit quantum probes for the temperature of an Ohmic environment*, F. Gebbia, C. Benedetti, F. Benatti, R. Floreanini, M. Bina, and M. G. A. Paris, Phys. Rev. A 101, 032112 (2020)
- [29] *Quantum thermometry by single-qubit dephasing*, S. Razavian, C. Benedetti, M. Bina, Y. Akbari-Kourbolagh, and M. G. A. Paris, Eur. Phys. J. Plus 134, 284 (2019)
- [28] *Quantum probes for Ohmic environments at thermal equilibrium*, F. Salari Sehdaran, M. Bina, C. Benedetti, M. G. A. Paris, Entropy 21, 486 (2019)
- [27] *Quantum state engineering assisted by non-deterministic noiseless linear amplifier*, H. Adnane, M. Bina, F. Albarelli, H. Gharbi and M. G. A. Paris, Phys. Rev. A 99, 063823 (2019)
- [26] *Continuous-variable quantum probes for structured environments*, M. Bina, F. Grasselli and M. G. A. Paris, Phys. Rev. A 97, 012125 (2018).
- [25] *Homodyne-like detection scheme based on photon-number-resolving detectors*, Allevi, M. Bina, S. Olivares and M. Bondani, Int. J. Quant. Inf. 15, 1740016 (2017).
- [24] *Homodyne-like detection for coherent state-discrimination in the presence of phase noise*, M. Bina, A. Allevi, M. Bondani, and S. Olivares, Opt. Exp. 25, 10685 (2017).
- [23] *Probing the diamagnetic term in light-matter interactions*, M. A. C. Rossi, M. Bina, M. G. A. Paris, M. G. Genoni, G. Adesso, and T. Tufarelli, Quantum Sci. Technol. 2, 01LT01 (2017).
- [22] *Assessing the significance of fidelity as a figure of merit in quantum state reconstruction of discrete and continuous variable systems*, A. Mandarino, M. Bina, C. Porto, S. Cialdi, S. Olivares, and M. G. A. Paris, Phys. Rev. A 93, 062118 (2016).
- [21] *Phase-reference monitoring in coherent-state discrimination assisted by a photon-number resolving detector*, M. Bina, A. Allevi, M. Bondani and S. Olivares, Sci. Rep. 6, 26025 (2016).
- [20] *Dicke coupling by feasible local measurements at the superradiant quantum phase transition*, M. Bina, I. Amelio, and M. G. A. Paris, Phys. Rev. E 93, 052118 (2016).
- [19] *Collapse and revival of quantum coherence for a harmonic oscillator interacting with a classical fluctuating environment*, J. Trapani, M. Bina, S. Maniscalco, and M. G. A. Paris, Phys. Rev. A 91, 022113 (2015).
- [18] *Squeezing of mechanical motion via qubit-assisted control*  
M. G. Genoni, M. Bina, S. Olivares, G. De Chiara, and M. Paternostro, New J. Phys. 17, 013034 (2015).
- [17] *Intensity correlations from linear interactions*, M. Bina and S. Olivares, Quantum Meas. Quantum Metrol. 2, 50 (2014).



- [16] *Entanglement generation in the ultra-strongly coupled Rabi model* M. Bina, S. Maffezzoli Felis, and S. Olivares, Int. J. Quant. Inf 12, 1560016 (2014).
- [15] *About the use of fidelity in continuous variable systems* A. Mandarino, M. Bina, S. Olivares, and M. G. A. Paris, Int. J. Quant. Inf. 12, 1461015 (2014).
- [14] *Drawbacks of the use of fidelity to assess quantum resources* M. Bina, A. Mandarino, S. Olivares, and M. G. A. Paris, Phys. Rev. A 89, 012305 (2014).
- [13] *Backscattering Differential Ghost Imaging in Turbid Media* M. Bina, D. Magatti, M. Molteni, A. Gatti, L. A. Lugiato, and F. Ferri, Phys. Rev. Lett. 110, 083901 (2013).
- [12] *Solvable model of dissipative dynamics in the deep strong coupling regime* M. Bina, G. Romero, J. Casanova, J. J. García-Ripoll, A. Lulli, and E. Solano, Eur. Phys. J. Special Topics 203, 207 (2012).
- [11] *The coherent interaction between matter and radiation. A tutorial on the Jaynes-Cummings model* M. Bina, Eur. Phys. J. Special Topics 203, 163 (2012).
- [10] *Robustness of tripartite entanglement transfer from bosonic modes to localized qubits* A. Lulli, M. Bina, and M. G. Genoni, Eur. Phys. J. Special Topics 203, 25 (2012).
- [9] *Photon path length distribution in random media from spectral speckle intensity correlations* L. F. Rojas, M. Bina, G. Cerchiari, M. A. Escobedo-Sánchez, F. Ferri, and F. Scheffold, Eur. Phys. J. Special Topics 199, 167 (2011).
- [8] *Entanglement transfer in a multipartite cavity QED open system* M. Bina, F. Casagrande, M. G. Genoni, A. Lulli and M. G. A. Paris, Int. J. Quant. Inf. 9, Suppl. (2011) 83.
- [7] *Tripartite quantum state mapping and discontinuous entanglement transfer in a cavity QED open system*, M. Bina, F. Casagrande, M. G. Genoni, A. Lulli and M. G. A. Paris, Phys. Scr. T 140, 014015 (2010).
- [6] *Dynamical description of state mapping and discontinuous entanglement transfer for tripartite systems*, M. Bina, F. Casagrande, M. G. Genoni, A. Lulli and M. G. A. Paris, Eur. Phys. Lett. 90, 30010 (2010).
- [5] *Decoherence in the solvable dynamics of  $N$  strongly driven atoms coupled to a cavity mode* M. Bina, F. Casagrande and A. Lulli, Opt. and Spectr. 108, 356 (2010).
- [4] *Decoherence-free multipartite atomic entanglement in a cavity QED system* M. Bina, F. Casagrande and A. Lulli, Int. J. Quant. Inf. 7, 229 (2009).
- [3] *Solvable Dynamics of  $N$  Driven Two-Level Atoms Coupled to a Dissipative Cavity Mode* M. Bina, F. Casagrande and A. Lulli, Laser Physics 19, 362 (2009).
- [2] *Exact results on decoherence and entanglement in a system of  $N$  driven atoms and a dissipative cavity mode*, M. Bina, F. Casagrande, A. Lulli, Eur. Phys. J. D 49, 257 (2008).
- [1] *Monitoring atom-atom entanglement and decoherence in a solvable tripartite open system in cavity QED*, M. Bina, F. Casagrande, A. Lulli and E. Solano, Phys. Rev. A 77, 033839 (2008).

## Proceedings

- (II) *Hybrid Homodyne-like Detection Scheme with Photon-Number-Resolving Detectors*, Allevi, M. Bina, S. Olivares and M. Bondani, Proceedings - PIERS 22-25 May 2017.
- (I) *Real-time phase-reference monitoring in a quasi-optimal coherent-state receiver*, Allevi, M. Bina, M. Bondani, and S. Olivares, Proc. of SPIE 9505, 95050J-1 (2015).

## Conferences / Schools / Research visits

- Attendance at International Summer School “Quantum characterization and control of quantum complex systems(QCQC) 2022”, Como, Sep 2022.

- Young Italian Quantum Information Science (YIQIS) 2020, Online Conference, Sep 2020.  
**Invited Talk** to the Industry Career Panel
- Italian Quantum Information Science (IQIS) 2019, Milano, Sep 2019.  
Poster : *Engineering Solid-State Qubits Structures for High-Temperature Silicon Quantum Computing Through Multi-Scale Simulations*
- Lectures series on Quantum Optics at Queen's University Belfast, Belfast (UK), Apr 2019.  
Founded by *ERASMUS+ Staff Mobility for Teaching*.
- Research visit at Queen's University Belfast, Belfast (UK), Apr 2019.  
**Invited Seminar** : *Compendium on the quantum probing of Ohmic environments*.
- Research visit at Trinity College Dublin, Dublin (Ireland), Apr 2019.  
**Invited Seminar** : *Compendium on the quantum probing of Ohmic environments*.
- Italian Quantum Information Science (IQIS) 2018, Catania, Sep 2018. Talk: *Quantum probing of structured environments*
- Attendance at International Summer School "Quantum Complex Systems out of Equilibrium (QCSE) 2018", Como, Jul 2018.
- International Laser Physics Workshop (LPHYIS'18), Nottingham (UK), Jul 2018. **Invited Talk**: *Quantum probing of structured environments*.
- QuProCS Meeting III, Oxford (UK), Mar 2018.  
Talk: *Continuous-variable probing of structured environments*.
- Workshop AQM 2017, Varazze, Sep 2017.  
**Invited Talk** : *Continuous-variable probing of structured environments*
- Italian Quantum Information Science (IQIS) 2017, Firenze, Sep 2017. Poster : *Continuous-variable probing of structured environments*
- 15th International Conference on Squeezed States and Uncertainty Relations (ICSSUR) 2017, Jeju, South Korea, Aug 2017.  
**Invited Talk** : *Continuous-variable probing of structured environments*
- QuProCS Meeting II, Palma de Mallorca, Spagna, Apr 2017. Talk : *Continuous-variable probing of structured environments*
- Workshop AQM 2016, Venezia, Jun 2016.  
**Invited Talk**: *Use of PNR detectors in noisy communication schemes*
- Workshop AQM 2015, Modena, May 2015.  
**Invited Talk**: *Phase monitoring and state discrimination: an adaptive BPSK communication scheme*
- Macroscopic Quantum Coherence, Jun 2015, St. Andrews, Scotland - Poster.
- Workshop *Quantum Expo*, Milano, Dec 2014.  
**Invited Talk** : *Squeezing of mechanical motion via qubit-assisted control*.
- Italian Quantum Information Science (IQIS), Salerno, Sep 2014.  
**Invited Talk** : *Real-time phase monitoring for quasi-optimal coherent-state receiver*
- Research visit at Universidad del País Vasco, Bilbao (Spain), Jun 2014. **Invited Seminar** : *Dynamics in the deep strong coupling regime*.
- Quantum 2014: VII Workshop ad memoriam of Carlo Novero. Advances in Foundations of Quantum Mechanics and Quantum Information with atoms and photons, Torino INRIM, May 2014.  
Poster : *Entangling two qubits in the deep strong coupling regime*



- Italian Quantum Information Science (IQIS), Como, Sep 2013. Poster : *Dissipative dynamics in the deep strong coupling regime*
- FisMat 2013, Milano, Sep 2013.  
Talk : *Ghost imaging and Imaging in turbid media*
- Resonator QED, Monaco di Baviera (Germania), Sep 2013. Poster : *Dissipative dynamics in the deep strong coupling regime*
- Attendance at International Workshop EPS-SIF “Passion for Light”, Villa Monastero Varenna, Sep 2011.
- Attendance at International Summer School “School for Training in Experiments with Lasers and Laser Applications (STELLA) 2011”, Como, Jun 2011.
- Attendance at International Summer School “Criteria and Approaches for Radioactive Waste Management and Nuclear Decommissioning”, Milano and JRC Ispra (VA), Jul 2010.
- Quantum 2010: V Workshop ad memoriam of Carlo Novero. Advances in Foundations of Quantum Mechanics and Quantum Information with atoms and photons, Torino INRIM, May 2010.  
Talk : *Entanglement transfer in a multipartite cavity QED open system*
- Attendance at Quantum Information and solid-state system (QISSS) - Bilbao (Spagna), Sep 2009.
- Central European Workshop on Quantum Optics 2009 (CEWQO), Turku (Finlandia), May 2009.  
Talk: *Tripartite entanglement transfer from radiation modes to trapped atoms in dissipative environment*
- Attendance at International Summer School “EUROPE09” a Cortona (AR), May 2009. Poster: *Analytical results for a cavity QED system of  $N$  driven atoms and one dissipative field mode: decoherence and entanglement*
- “XII International Conference on Quantum Optics and Quantum Information” (ICQOQI), Vilnius (Lituania), Sep 2008.  
**Invited Talk** : *Decoherence-free states in the solvable dynamics of  $N$  strongly driven atoms coupled to a dissipative cavity mode*
- ICQI 2008: Quantum Entanglement and Decoherence: 3rd International Conference on Quantum Information (ICQI), Boston (MA, USA), Jul 2008.  
Poster: *Analytical results for a cavity QED system of  $N$  driven atoms and one dissipative field mode: decoherence and entanglement*
- Quantum 2008: IV Workshop ad memoriam of Carlo Novero. Advances in Foundations of Quantum Mechanics and Quantum Information with atoms and photons, Torino INRIM, May 2008.  
Poster: *Analytical results for a cavity QED system of  $N$  driven atoms and one dissipative field mode: decoherence and entanglement*
- Attendance at “Quantum Mechanics: from fundamental problems to applications”, Bertinoro (FO), Dec 2006.

## Collaborations

**Theoretical groups:** Dr. Filippo Troiani, CNR Istituto Nanoscienze of Modena, Prof. M. Paternostro, Queen’s University Belfast; Prof. Sabrina Maniscalco, University of Turku; Dr. G. Adesso e Dr. T. Tufarelli, University of Nottingham; Prof. Enrique Solano, Universidad del País Vasco.

**Experimental groups:** Prof. Simone Cialdi, Università degli Studi di Milano; Dr. M. Bondani, Università degli Studi dell'Insubria; Prof. Fabio Ferri Università degli Studi dell'Insubria.

## Referee for international peer-reviewed journals

*Scientific Reports, Physical Review A, Physical Review Letters, Optics Letters, Optics Express, Optics Communications, European Physical Journal D, Journal of the Optical Society of America B, International Journal of Quantum Information, Quantum Information and Computation, Physics Letters A.*

## Languages

Italian **Mothertongue**

English **Advanced level**

Spanish **Basic level**

Data

07/03/2023

Luogo

Milano