

Curriculum Vitae

Fabio Antonio Bovino

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1 SHORT CV

Name	Fabio Antonio Bovino
Company	Leonardo S.p.A /SAPIENZA University of Rome
Nationality	ITALY
Languages	English
Position	Chief Scientist Quantum Optics Lab LEONARDO s.p.a. / Professor "Sapienza" University of Rome
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Fabio Antonio Bovino, born in 02/03/1969, was employed at Elsag, a Finmeccanica Company, in September 2001 (LEONARDO in January 2016). He is the founder and the chief scientist of Quantum Optics Lab. He has participated to national and international research projects financed by MIUR, Italian Ministry of Defense and European Community. He is author of more than 100 publications in national/international journals and 14 patents in the fields of Foundation of Quantum Mechanics, Quantum Optics, Quantum Information and Computing. Highlights are the first demonstration of a quantum cloning machine (2001), the first experiment beyond Bell's Inequalities for entanglement characterization (2004), the design and the realization of the first Italian Quantum Cryptography prototype (2004) and product (the Q-KeyMaker® 2011). He was Lecturer at ICTP, The Abdus Salam International Centre for Theoretical Physics and at Ettore Majorana Foundation and Centre for International Culture, where he was, in 2012, Director of the course "Advances in Nanophotonics". He was awarded in 2004 and 2012 with FINMECCANICA Innovation Prize, in 2005, 2006 with Elsag Innovation Prize, in 2008, with Best Patent Prize, in 2010 with Selex-SI Innovation Prize, in 2013 with Selex-ES Patent Innovation Prize, in 2017 with Outstanding Reviewer Award IOP. He is member of the teaching and scientific board of Second Level Master on Optics and Quantum Information - University of Rome "Sapienza".

2 EXPERIENCE

2001-2004	Team Leader Quantum Optics Lab (ELSAG -Finmeccanica)
2005-2010	Head Quantum Optics Lab (ELSAG DATAMAT -Finmeccanica)
2010-2013	Head Quantum Optics Lab (SELEX-SI -Finmeccanica)
2013-2016	Head Quantum Technologies Lab (SELEX-ES -Finmeccanica)
2017 to present	Head Quantum Optics Lab (LEONARDO -Finmeccanica)
2007	Lecturer Course Advances in NanoPhotonics II at Ettore Majorana Foundation and Centre for Scientific Culture
2010	Lecturer Course Advances in NanoPhotonics III at Ettore Majorana Foundation and Centre for Scientific Culture
2011	Lecturer Workshop on Singular Optics and its Application to Modern Physics at ICTP The Abdus Salam International Centre for Theoretical Physics
2012	Lecturer Winter College on Optics: Advances in Nano-Optics and Plasmonics at ICTP The Abdus Salam International Centre for Theoretical Physics
2012	Director and Lecturer of Course Advances on NanoPhotonics IV at Ettore Majorana Foundation and Centre for Scientific Culture
2013	Lecturer at ESAS Summer School on New Trends with Superconducting Quantum Detectors at European Society for Applied Superconductivity (ESAS)
2016	Lecturer School of Photonics 2016: "Plasmonics and Nano-Optics" at Scuola NORMALE Superiore di Pisa
2013 to present	Member of the teaching and scientific board of Second Level Master on Optics and Quantum Information -- Dept. SBAI - University of Rome "Sapienza". http://www.masteroqi.uniroma1.it
	Professor at Università "Sapienza" Roma MASTER in "OPTICS and QUANTUM INFORMATION"
	1) FIS/01 Informazione Quantistica I (5 Credits 50Hours)
	2) FIS/01-ING-INF/02 Informazione Quantistica II (5 Credits 50Hours)
	3) FIS/01-ING-INF/02 Computazione Quantistica (5 Credits 50Hours)
	4) FIS/01-ING-INF/02 Dispositivi per la Computazione Quantistica (3 Credits 30 Hours)

A.A. 2020-2021
Rif. Bando 7/2020 del 11/05/2020
https://web.uniroma1.it/trasparenza/sites/default/files/Bando%207_2020%20Approvazione%20atti.pdf
https://web.uniroma1.it/trasparenza/sites/default/files/Bando%207_2020%20Approvazione%20atti%20integrazione.pdf

A.A. 2019-2020
Rif. Bando 9/2019 del 26/06/2019
<https://web.uniroma1.it/trasparenza/sites/default/files/BANDO%209%202019%20approvazione%20atti.pdf>
Rif. Bando 20/2019 del 18/10/2019
https://web.uniroma1.it/trasparenza/sites/default/files/Bando%2020_2019%20verbale%20master.pdf

A.A. 2018-2019
Rif. Bando 6/2018 del 27/03/2018
http://sbai.uniroma1.it/sites/default/files/Bando%206_2018%20approvazione%20atti.pdf

A.A. 2015-2016
Rif. Bando 5/2016 del 20/04/2016
<https://www.sbai.uniroma1.it/sites/default/files/decreto%20approvazione%20atti%20master%202016.pdf>

A.A. 2014-2015
Rif. Bando 6/2015 del 19/03/2015
<https://www.sbai.uniroma1.it/sites/default/files/approvazione%20atti%20incarichi%20master%202015.pdf>

A.A. 2013-2014
Rif. Bando 4/2014 del 17/06/2014
<https://www.sbai.uniroma1.it/sites/default/files/approvazione%20atti%20master%202014.pdf>

3 PROJECTS

- (2021-) "QUASAR": Quantum Safe Network Contratto N. 531 di Rep. del 29.12.2020 Lotto I - Chief Scientist
- (2020-) "COPERNICO": Chip per la computazione quantistica e sensoristica avanzata nel vicino IR" Contratto n° 168 di Rep. del 18.03.2016 Lotto III - Chief Scientist
- (2018-2019) "COPERNICO": Chip per la computazione quantistica e sensoristica avanzata nel vicino IR" Contratto n° 168 di Rep. del 18.03.2016 Lotto II - Chief Scientist
- (2017-2018) "COPERNICO": Chip per la computazione quantistica e sensoristica avanzata nel vicino IR" Contratto n° 168 di Rep. del 18.03.2016 Lotto I - Chief Scientist
- (2012-2018) "Qu-Cryptnet: Crittografia Quantistica su Rete" Contratto n° 10081 (C.P. 101/11/0176) in data 27.12.2011 - Lotto II Chief Scientist/Project Manager
- (2012-2014) "Qu-Cryptnet: Crittografia Quantistica su Rete" Contratto n° 10081 (C.P.101/11/0176) in data 27.12.2011 - Lotto I Chief Scientist/Project Manager
- (2011-2013) "Marine: Materiali ad indice di Rifrazione Negativo nel visibile e criteri di invisibilità" - Contratto N. 1196 di Rep. 23/12/2009- Repubblica Italiana Ministero della Difesa.
Principal Investigator
- (2008-2010) "Crittografia Quantistica Avanzata" - Contratto N. 9223 di Rep. 22/12/2005- Repubblica Italiana Ministero della Difesa Direzione Generale delle Telecomunicazioni, dell'Informatica e delle Tecnologie Avanzate, Lotto III & IV; Chief Scientist/Project Manager
- (2005-2007) "Crittografia Quantistica Avanzata" - Contratto N. 9223 di Rep. 22/12/2005- Repubblica Italiana Ministero della Difesa Direzione Generale delle Telecomunicazioni, dell'Informatica e delle Tecnologie Avanzate, Lotto I & II; Chief Scientist/Project Manager
- (2005-2009) "QAP-Qubit Applications" FP6-2004-IST-FET N. 015848-01/11/2005 Proactive Initiative;
Chief Scientist/Principal Investigator
- (2001-2004) "QuCrypt - Quantum Cryptographic Key Distribution" Ministero dell'Università e Ricerca (MIUR) - contratto N. 67679/ L. 488; Chief Scientist/Project Manager
- (1998-2002) "European Quantum Cryptography and Single Photon Optical Technologies" EQCSPOT ESPRIT EC28139;
Principal Investigator

4 PATENTS

1. Fabio Antonio Bovino (2016) (EP3109803) "Structure and method for processing quantum information".
2. Fabio Antonio Bovino (2015) (EP14712035 - US2015365230A1) "Quantum Cryptographic Key Distribution System Including Two Peripheral Devices and an Optical Source"
3. Fabio Antonio Bovino (2015) (EP2798770 - US20150003824) "Method and system for estimating the noise of a two-photon entangled state"
4. Fabio Antonio Bovino (2013) (EP2543957) "Interferometer and method for controlling the coalescence of a pair of photons"
5. Fabio Antonio Bovino (2013) (EP2555466) "System for distributing cryptographic keys"
6. Fabio Antonio Bovino, Matteo Braccini, Alessio Benedetti (2013) (EP2551714 - US20130038932) "Plasmonic plate for generating optical vortices"
7. Fabio Antonio Bovino, Matteo Braccini (2013) (EP2551715 -US20130027774) "Height-adjustable phase plate for generating optical vortices"
8. Fabio Antonio Bovino, Maurizio Giardina, Maria Cristina Larciprete, Marco Centini, Alessandro Belardini, Concita Sibilìa, Mario Bertolotti, Adriana Passaseo, Vittorianna Tasco, Roberto Cingolani (2011) (EP2362950) "Optical Logic Gate"
9. Fabio Antonio Bovino, Maurizio Giardina, Maria Cristina Larciprete, Concita Sibilìa (2010) (EP2414893 -US20120158366) "Method and system for determining second-order nonlinear optical coefficient"
10. Fabio Antonio Bovino (2007) (EP1649632) "Generator of photon pairs using parametric fluorescence"
11. Fabio Antonio Bovino (2007) (EP1652335) "Device for the generation of entangled photons and their weighted distribution among four users"
12. Fabio Antonio Bovino, Pietro Varisco, Paolo De Nicolo (2006) (EP1730879) "Method and device for synchronizing and acquiring twin photons for a quantum cryptography process"
13. Fabio Antonio Bovino, Pietro Varisco (2004) (ITTO200300069) "Metodo e Processo di sincronizzazione per processo di crittografia quantistica"
14. Fabio Antonio Bovino, Giovanni Di Giuseppe, Alexander Wladimir Sergienko (2004) (ITTO20030068) "Accoppiatore Ottico"

5 PRODUCTS

1. Q-KeyMaker® (TradeMark N. 010406874, April 18, 2012)
2. Quantum NonLinear Ellipsometer
3. Plasmonic Sensor

6 AWARDS

- 2017 1. OUTSTANDING REVIEWER AWARD 2017 Feb 1, 2018 IOP publishing
- 2012 2. Premio Innovazione FINMECCANICA 2012 Riconoscimento Speciale IDEA: "Plasmonic Sniffer".
- 2010 3. Premio Innovazione SELEX Sistemi Integrati 2010: "Practical Quantum Key Distribution on Metropolitan Area Network: The Q-KeyMaker®".
- 2009 4. Premio Brevetto ELSAG DATAMAT 2009: "Metodo e dispositivo di sincronizzazione e di rivelazione di fotoni gemelli per processi di crittografia quantistica".
- 2008 5. Premio Innovazione ELSAG DATAMAT 2008 Menzione Speciale: "Full Optical Xor -- FOX".
- 2006 6. Premio Innovazione ELSAG 2006: "Explosive Sniffer by Quantum Technologies".
- 2005 7. Premio Innovazione ELSAG 2005: "Second Generation Quantum Computing".
- 2004 8. Premio Innovazione FINMECCANICA 2004: "Crittografia Quantistica".



7 PUBLICATION LIST

7.1 JOURNALS

1. F A Bovino (2019) "Intrasystem entanglement generator and unambiguous Bell states discriminator on chip"; In Special Sessions: Emerging Quantum Signal Processing Paradigms ICASSP 2019, Brighton UK (15-17 May 2019)
2. Emilija Petronijevic, Elizabeth Mendoza Sandoval, Mohammad Ramezani, César Ordóñez-Romero, Cecilia Noguez, Fabio Antonio Bovino, Concita Sibilía, Giuseppe Pirruccio (2019) Extended Chiro-Optical Near-Field Response of Achiral Plasmonic Lattices *The Journal of Physical Chemistry C*
3. Emilija Petronijevic, Marco Centini, Tiziana Cesca, Giovanni Mattei, Fabio Antonio Bovino, Concita Sibilía (2019) Control of Au nanoantenna emission enhancement of magnetic dipolar emitters by means of VO₂ phase change layers *Optics Express* 27: 17. pp. 24260-24273 August.
4. A Convertino, V Mussi, L Maiolo, M Ledda, M G Lolli, F A Bovino, G Fortunato, M Rocchia, A Lisi (2018) Array of disordered silicon nanowires coated by a gold film for combined NIR photothermal treatment of cancer cells and Raman monitoring of the process evolution. *Nanotechnology*. 2018 Oct 12;29(41):415102. doi: 10.1088/1361-6528/aad6cd. Epub 2018 Jul 30.
5. E Petronijevic¹, G Leahu, V Mussi, C Sibilía, F A Bovino (2017) "Photoacoustic technique for the characterization of plasmonic properties of 2D periodic arrays of gold nanoholes" *AIP Advances* 7: 2. 10.1063/1.4977545.
6. F A Bovino, A Messina (2016) "Increasing operational command and control security by the implementation of device independent quantum key distribution"; In: Proc. SPIE 9996, Quantum Information Science and Technology II, 999606 (24 October 2016)
7. A Benedetti, A Veroli, C Sibilía, F A Bovino (2015) "Numerical evaluation of irradiation diagram by plasmonic gratings and slit apertures" *JOSA B* Vol 32: Issue 4. 676-682 March
8. Fabio Antonio Bovino, Vittorianna Tasco, Adriana Passaseo, Maria Cristina Larciprete, Alessandro Belardini, Concita Sibilía (2014) "On the Optical Axis Misalignment Detection by Noncollinear Second Harmonic" *Generation JOSA B* 31: 1. 26-32.
9. Fabio Antonio Bovino, Maria Cristina Larciprete, Gregore Leahu, Concita Sibilía, Gyorgy Varo, Csilla Gergely (2013) "Detection of Second Order Nonlinear Optical Magnetization By Mapping Normalized Stokes Parameters" *JOSA B* Vol 30: Issue 3. 568-575
10. Fabio Antonio Bovino, Maria Cristina Larciprete, Concita Sibilía, Gyorgy Varo, Csilla Gergely (2012) "Evidence of Multipolar Response of Bacteriorhodopsin by Noncollinear Second Harmonic Generation" *Optics Express* Vol. 20: Iss. 13. pp. 14621.14631
11. Fabio Antonio Bovino, Matteo Braccini, Maurizio Giardina, Concita Sibilía (2011) "Orbital Angular Momentum in Noncollinear Second Harmonic Generation by off-axis vortex beams" *JOSA B* 28: 11. 2806--2811 October
12. Fabio Antonio Bovino, Matteo Braccini, Mario Bertolotti, Concita Sibilía (2011) "Management of the Orbital Angular Momentum of Vortex Beams in a Quadratic Nonlinear Interaction" *Optics Communications* 284: Issue10-11. 2587-2593 May
13. F A Bovino (2009) "Bidirectional Secret Communication by Quantum collisions *Journal of Information Assurance and Security*" 4: 466-469
14. F A Bovino, I P Degiovanni (2009) "Quantum Correlation Bounds for Wigner's Inequality Generalized Parametrization" *International Journal of Quantum Information* 7: Supplement. 257-262
15. F A Bovino, M C Larciprete, A Belardini, C Sibilía (2009) "Evaluation of the optical axis tilt of zinc oxide via noncollinear second harmonic generation" *Applied Physics Letters* 94: 251109.
16. M C Larciprete, F A Bovino, M Giardina, A Belardini, M Centini, C Sibilía, M Bertolotti, A Passaseo, V Tasco (2009) "Mapping the nonlinear optical susceptibility by noncollinear second-harmonic generation" *Optics Letters* 34: Issue 14. 2189-2191
17. F A Bovino, M C Larciprete, M Giardina, A Belardini, M Centini, C Sibilía, M Bertolotti, A Passaseo, V Tasco (2009) "Optical polarization based logic functions (XOR or XNOR) with nonlinear Gallium nitride nanoslab" *Optics Express* 17: Issue 22. 19337-19344
18. M C Larciprete, F A Bovino, A Belardini, C Sibilía, M Bertolotti (2009) "Bound and free waves in non-collinear second harmonic generation" *Optics Express* 17: Issue 19. 17000-17009
19. F A Bovino, I P Degiovanni (2008) "Quantum Correlation Bounds for Quantum Information Experiments Optimization: the Wigner Inequality Case" *Physical Review A* 77: 053822.
20. Olavo Cosme, S Pádua, Fabio A Bovino, A Mazzei, Fabio Sciarrino, Francesco De Martini (2008) "Hong-Ou-Mandel interferometer with one and two photon pairs" *Physical Review A* 77: 0621107
21. F A Bovino (2008) "Nonlinear Inequalities and Entropy-concurrence plane" *International Journal of Theoretical Physics* 47: 2148.2157
22. F A Bovino, M Giardina, K Svozil, V Vedral (2007) "Spatial Orientation using Quantum Telepathy" *International Journal of Quantum Information* 5: 1 & 2. 43.49
23. Fabio A Bovino, Giuseppe Castagnoli, Adan Cabello, Antia Lamas-Linares (2006) "Experimental noise resistant Bell inequality violations for polarization-entangled photons" *Physical Review A* 73: 062110.

24. F A Bovino, G Castagnoli, A Ekert, P Horodecki, C M Alves, A V Sergienko (2006) "Nonlinear Properties of Bipartite Quantum States" *Open System & Information Dynamics* 13: 1-9
25. F A Bovino, P Varisco, A Martinoli, A M Colla, G Castagnoli, G Di Giuseppe, A V Sergienko (2005) "Practical Quantum Key Distribution Using Polarization Entangled States" *International Journal of Quantum Information* 3: 11-6
26. I P Degiovanni, I Ruo Berchera, S Castelletto, M L Rastello, F A Bovino, A M Colla, G Castagnoli (2005) "Reply to Comment on Quantum dense key distribution" *Physical Review A* 71: 016302.
27. F A Bovino, G Castagnoli, A Ekert, P Horodecki, C M Alves, A V Sergienko (2005) "Direct Measurement of Nonlinear Properties of Bipartite Quantum States" *Physical Review Letters* 95: 240407.
28. F A Bovino, G Castagnoli, I Degiovanni, S Castelletto (2004) "Experimental evidence of bounds of quantum correlations" *Physical Review Letters* 92: 060404.
29. I P Degiovanni, I Ruo Berchera, S Castelletto, M L Rastello, F A Bovino, A M Colla, G Castagnoli (2004) "Quantum dense key distribution" *Physical Review A* 68: 032310.
30. F A Bovino, A M Colla, G Castagnoli, S Castelletto, I Degiovanni, M L Rastello (2003) "Experimental eavesdropping attack against Ekert's protocol based on Wigner's inequality" *Physical Review A* 68: 034309.
31. F A Bovino, P Varisco, A M Colla, G Castagnoli, G Di Giuseppe, A V Sergienko (2003) "Effective Fiber-coupling of Entangled Photons for Quantum Communication" *Optics Communications* 227: 4-6. 343-348
32. F De Martini, V Mussi, F A Bovino (2000) "Schrodinger cat states and optimum universal quantum cloning by entangled parametric amplification" *Optics Communications* 179: 581-589

7.2 BOOK CHAPTERS

1. M Bertolotti, F Bovino, C Sibia (2015) *Quantum State Engineering: Generation of Single and Pairs of Photons Chapter 1* Edited by: Edited by E. Wolf. 1-117 ELSEVIER 60: Progress in Optics isbn:ISBN: 978-0-12-802284-9
2. Fabio Antonio Bovino (2014) *Capitolo X: Introduzione alla Crittografia Quantistica* In: *Optoelettronica e Fotonica* Edited by: ARACNE editrice S.r.l. isbn:978-88-548-7453-4
3. Fabio Antonio Bovino, Maria Cristina Larciprete, Concita Sibia, Maurizio Giardina, Gyorgy Varo, Csilla Gergely (2012) "Nonlinear Ellipsometry by Second Harmonic Generation" In: *Nonlinear Optics* Edited by: Dr. Natalia Kamanina. InTech isbn:978-953-51-0131-4
4. Fabio A Bovino, Matteo Braccini, Concita Sibia, Mario Bertolotti (2011) "Twin Photons Generation in an Integrated Photonic Crystal Structure" In: *Selected Topics in Photonic Crystals and Metamaterials* Edited by: A. Andreone, A. Cusano, A. Cutolo, V. Galdi. World Scientific Publishing Co. Pte. Ltd. isbn:13 978-981-4355-18-6 10 981-4355-18-6
5. F De Martini, V Mussi, F Bovino (2000) "Schrodinger cat states and optimum universal quantum cloning by entangled parametric amplification". In: *Ode to a Quantum Physicist* Edited by: H. Walther, W. Schleich, W.E. Lamb. Elsevier isbn:0-444-50538-5

7.3 CONFERENCE PROCEEDINGS

1. F A Bovino (2015) "Efficient Photonic Quantum Computing"; In: *The European Conference on Lasers and Electro-Optics 2015 Munich Germany 21--25 June 2015* ISBN: 978-1-4673-7475-0 ISBN: 978-1-4673-7475-0
2. F A Bovino, V Mussi, G Leahu, A Benedetti, E Petronijevic, C Sibia (2015) "About optical coupling properties of 2D plasmonic nanostructures" ; In: *2015 Fotonica AEIT Italian Conference on Photonics Technologies*
3. Fabio Antonio Bovino (2015) "Device Independent Quantum Key Distribution: A Practical System"; In: *Proceedings SEDA 2014 the 3rd international conference in software engineering for defence applications Rome, Italy. September 22-23, 2014*
4. A Benedetti, A Veroli, C Sibia, F A Bovino (2015) "Accurate Numerical Procedure for Fast Evaluation of the Irradiation Diagram From Scatterers in The Optical and IR Domain"; In: *Proceedings SEDA 2014 the 3rd international conference in software engineering for defence applications Rome, Italy. September 22-23, 2014*
5. Concita Sibia, Alessandro Belardini, Fabio Antonio Bovino (2014) "On Nonlinear Optical Properties of Chiral Materials"; In: *16th International Conference on Transparent Optical Networks (ICTON), Graz, Austria, July 6-10, 2014* 1-4 IEEE CONFERENCE PUBLICATIONS
6. Fabio Antonio Bovino, Andrea Veroli, Alessio Benedetti, Concita Sibia (2014) "Controllable Optical Beam By Means of nanopatterned plasmonics device" In: *Photonics Technologies, 2014 Fotonica AEIT Italian Conference on* 1-3 IEEE ISBN 978-8-8872-3718-4
7. F Bovino, A Benedetti, A Veroli, C Sibia (2014) "On the controllable optical beam direction by means of nanopatterned plasmonics device" *Proc. SPIE 9126, Nanophotonics V, 91260X (May 2, 2014)*

8. F.A. Bovino, G. Leahu, M.C. Larciprete, C. Sibilìa, G. Varo, C. Gergely (2013) "Nonlinear Optical Magnetization of Bacteriorhodopsin Films" In:FOTONICA 2013, 14° Convegno Nazionale delle Tecnologie Fotoniche, Milano, 21-23 maggio 2013.
9. F.A. Bovino, K. Leosson, P. Laporta (2013) "Experimental Demonstration of Controlled Coalescence and Anticoalescence of a Two Photon State on a 50/50 Plasmonic Coupler for Quantum Computing Applications" In:FOTONICA 2013, 14° Convegno Nazionale delle Tecnologie Fotoniche, Milano, 21-23 maggio 2013
10. M. Esposito, A. Campa, I. Tarantini, V. Tasco, A. Passaseo, A. Benedetti, C. Sibilìa, F. A. Bovino (2013) "Metallic Nano-Spirals as Chiral Metamaterials in the Optical Range" In:FOTONICA 2013, 14° Convegno Nazionale delle Tecnologie Fotoniche, Milano, 21-23 maggio 2013
11. Fabio Antonio Bovino, Maurizio Giardina (2011) "Practical Quantum Cryptography: the Q-KeyMaker". In: Proceedings of the Third International Symposium on Applied Sciences in Biomedical and Communication Technologies (ISABEL 2010), Rome, Italy, November 2010.
12. F.A. Bovino, M. Braccini, M. Bertolotti, C. Sibilìa (2011) "Vortex Beams in a Quadratic Nonlinear Interaction: Optical Control of the Angular Momentum of Light" In:Fotonica 2011, 13° Convegno Nazionale delle Tecnologie Fotoniche, Genova, 9-11 maggio 2011, ISBN 9788887237122
13. F A Bovino, M Giardina, C Cergely, G Váró, C Sibilìa (2011) "Optical Properties of Bacteriorhodopsin Film by Nonlinear Ellipsometry" In:Fotonica 2011, 13° Convegno Nazionale delle Tecnologie Fotoniche, Genova, 9-11 maggio 2011, ISBN 9788887237122
14. Fabio A Bovino (2011) "Representation of a Spiral Phase Plate as a Two Modes Quantum Phase Operator" In:Fotonica 2011, 13° Convegno Nazionale delle Tecnologie Fotoniche, Genova, 9-11 maggio 2011, ISBN 9788887237122
15. F A Bovino, C Gergely, G Varo, M C Larciprete, C Sibilìa (2011) "Bacteriorhodopsin films as efficient material for nonlinear optical devices" In:CLEO/Europe and EQEC 2011 Conference Digest, OSA Technical Digest (CD) (Optical Society of America, 2011), paper EF2_1.
16. F A Bovino, M C Larciprete, C Sibilìa, M Giardina, G Varo, C Gergely (2011) "Nonlinear optical properties of Bacteriorhodopsin by nonlinear ellipsometry" In: ISABEL '11 Proceedings of the 4th International Symposium on Applied Sciences in Biomedical and Communication Technologies
17. F A Bovino, M Braccini, C Sibilìa (2010) "Management of the Optical Angular Momentum of vortex beams in a quadratic nonlinear interaction" In:FOTONICA 2010, Atti del Convegno
18. F A Bovino, M Braccini, C Sibilìa (2010) "On the OAM in a quadratic nonlinear interaction of off axis vortex beams" In:FOTONICA 2010, Atti del Convegno
19. V Tasco, I Tarantini, A Campa, T Stomeo, G Epifani, A Passaseo, M Braccini, M C Larciprete, C Sibilìa, F A Bovino (2010) "GaN/AlGaN photonic crystals designed for the enhancement of non-linear effects" In: FOTONICA 2010, Atti del Convegno
20. F A Bovino, M Giardina (2010) "Practical Quantum Cryptography: the Elsag Datamat Q-KeyMaker" In:FOTONICA 2010, Atti del Convegno
21. F A Bovino, M C Larciprete, C Sibilìa (2010) "Noncollinear Second Harmonic Generation as Tool of Characterization of Thin Films" In:FOTONICA 2010, Atti del Convegno
22. T Stomeo, G Epifani, V Tasco, A Massaro, I Tarantini, A Campa, M De Vittorio, A Passaseo, M Braccini, M C Larciprete, C Sibilìa, F A Bovino (2010) "Fabrication of GaN/AlGaN 1D photonic crystals designed for nonlinear optical applications" In: Proc. SPIE, Vol. 7713, 771316
23. V Tasco, I Tarantini, A Campa, A Massaro, T Stomeo, G Epifani, A Passaseo, M Braccini, M C Larciprete, C Sibilìa, F A Bovino (2010) "GaN/AlGaN microcavities for enhancement of nonlinear optical effects" In: Proc. SPIE, Vol. 7713, 77131Q
24. F A Bovino, M Braccini, C Sibilìa (2010) "Orbital Angular Momentum of off-Axis Vortex Beams in a Quadratic Nonlinear Interaction" In: Nonlinear Photonics (NP), Karlsruhe, Germany, June 21, 2010
25. F A Bovino, M C Larciprete, M Centini, A Belardini, C Sibilìa, M Bertolotti, A Passaseo, V Tasco (2009) "Properties of quadratic noncollinear interaction of GaN based structures" In: Proc. SPIE 7354, 73540D
26. M C Larciprete, F A Bovino, M Centini, A Belardini, C Sibilìa, M Bertolotti, A Passaseo, V Tasco (2009) "Second harmonic generation from multilayer structures" In: IEEE/LEOS Winter Topicals Meeting Series, 2009 166 - 167
27. F A Bovino, M C Larciprete, M Giardina, A Belardini, M Centini, C Sibilìa, M Bertolotti, A Passaseo, V Tasco (2009) "Optical logic functions with nonlinear Gallium nitride nanoslab" In: IEEE-NANO 2009. 9th IEEE Conference on Nanotechnology 663 - 665
28. F A Bovino (2009) "Possibilities offered by non-homogeneous materials in the Quantum Information" In: Metamaterials- 2009 - 3rd International Congress on Advanced Electromagnetic Materials in Microwaves and Optics ISBN 978-0-9551179-6-1 120-122
29. F A Bovino (2008) "Bidirectional Secret Communication by Quantum Collisions" In: Advances in Soft Computing 53, Proceedings CISIS 2008

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31. Fabio Antonio Bovino (2007) "Theoretical and Experimental Characterization of Entropic Inequalities" In:AIP Conf. Proc. -- November 15, 2007 -- Volume 959, pp. 41-58 ADVANCES IN NANOPHOTONICS II: International Summer School on Advances in Nanophotonics II
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8 CONFERENCES

- INVITED 1. Second Workshop ad memoriam of Carlo Novero Advances in Foundations of Quantum Mechanics and quantum information with atoms and photons. IEN (Galileo Ferraris) Torino, Italy, 26-28 April 2004. "Experimental Evidence for Bounds on Quantum Correlations".
- INVITED 2. Convegno Crittografia Quantistica in pratica: lo stato dell'arte, Genova, Auditorium, Mostra Per fili e per segni, 16 November 2004. "Tecnologie quantistiche di seconda generazione: l'esperienza ElSag".
3. Quantum Physics of Nature (QUPON) Theory, Experiment & Interpretation, 20-26 May 2005 Vienna Austria. "Experimental Violation of Entropic Inequalities "
4. TQMFA 2005, New Trends in Quantum Mechanics: Fundamental Aspects and Applications, 11-13 November 2005, Palermo Italy. "Direct Measurements of Nonlinear Properties of Bipartite Quantum States"
- INVITED 5. Third Workshop ad memoriam of Carlo Novero Advances in Foundations of Quantum Mechanics and quantum information with atoms and photons, INRIM (Galileo Ferraris), Torino, Italy, 2-5 May 2006. "Spatial Orientation by Quantum Telepathy".
- INVITED 6. Workshop CRUI-Finmeccanica "Integrazione Scienza-Ingegneria per le Nanotecnologie: la collaborazione fra Finmeccanica e il sistema universitario", Torino, 24 May 2006. "Un (Quantum) Sniffer per il rilevamento di esplosivi".
7. FOTONICA 2007, 21-23 May 2007, Mantova Italy. "Distribuzione di chiavi crittografiche sicure attraverso stati entangled".
8. Central European Workshop on Quantum Optics, CEWQO 2007, Palermo, 1-5 June 2007. "Entropic Inequalities versus entropy-concurrence Plane".
- INVITED 9. «Ettore Majorana» Foundation and Centre for Scientific Culture, International School of Quantum Electronics 44th Course: Advances on Nanophotonics II Erice-Sicily: 22 June - 2 July 2007. Lecture: "Entropic inequalities versus Entropy-concurrence plane".
- INVITED 10. IV Workshop ad memoriam of Carlo Novero Advances in Foundations of Quantum Mechanics and quantum information with atoms and photons, INRIM (Galileo Ferraris), Torino, Italy, 19-23 May 2008. "Experimental Resistant to Noise Violation Bell's Inequalities for Polarization-Entangled Photons".
- INVITED 11. International Workshop on Advances in Nanoscale nonlinear Optics 8-10 October 2008, Chiostro Facoltà di Ingegneria - Via Eudossiana 19 - Roma, Italy. "Bidirectional Secret Communication by Quantum Collisions".
- INVITED 12. International Workshop on Advances in Nanoscale nonlinear Optics 8-10 October 2008, Chiostro Facoltà di Ingegneria- Via Eudossiana 19 - Roma, Italy. "Noncollinear Second Harmonic Generation from GaN films".
13. International Workshop on Computational Intelligence for Information systems CISIS 2008 23- 24 October 2008 Genova (Italy). " Bidirectional Secret Communication by Quantum Collisions ".

- INVITED 14. Trends on Processing Technologies AFCEA-Capitolo di Roma, 26 November 2008, Scuola Trasmissioni ed Informatica E.I., Caserma Perotti, Via dei Genieri 287 Cecchignola, ROMA. "Optical Quantum Computing".
- INVITED 15. Giornata di studio sul tema: Crittografia nelle reti ottiche, 16 February 2009 Pavia (Italy). "Crittografia Quantistica: Introduzione e Stato dell'Arte".
16. Nanotec2009 - nanotecnologie, competitività e innovazione per lo sviluppo industriale, 31 March-3 April 2009, Consiglio Nazionale delle Ricerche Roma (Italy). "Optical logic functions with nonlinear gallium nitride nanoslab".
- INVITED 17. FOTONICA 2010, 25-27 May 2009, Pisa Italy. "Practical Quantum Cryptography: the Elsas Datamat Q-KeyMaker".
18. FOTONICA 2009, 27-29 May 2009, Pisa Italy. "Optical logic functions with nonlinear gallium nitride nanoslab".
- INVITED 19. Società Italiana di Fisica-XCV Congresso Nazionale. Bari, 28 September- 3 October, 2009. "Beyond Bell's Inequality".
20. FOTONICA 2010, 25-27 May 2010, Pisa Italy. "Noncollinear Second Harmonic Generation as Tool of Characterization of Thin Films".
21. FOTONICA 2010, 25-27 May 2010, Pisa Italy. "On the OAM in a quadratic nonlinear interaction off axis vortex beams".
- INVITED 22. La sfida tecnologica della crittografia AFCEA-Capitolo di Roma, 1 July 2010. Scuola Trasmissioni ed Informatica E.I., Caserma Perotti, Via dei Genieri 287 Cecchignola, ROMA. "Practical Quantum Cryptography: the Elsas Datamat Q-KeyMaker".
- INVITED 23. «Ettore Majorana» Foundation and Centre for Scientific Culture, International School of Quantum Electronics 44th Course: Advances on Nanophotonics III Erice-Sicily: 11 July - 18 July 2010. Lecture: "Practical Quantum Cryptography".
24. Società Italiana di Fisica-XCVI Congresso Nazionale. Bologna, 20-23 September 2010. "Practical Quantum Cryptography: The Q-KeyMaker".
25. Società Italiana di Fisica-XCVI Congresso Nazionale. Bologna, 20-23 September 2010. "Optical angular momentum in a quadratic nonlinear interaction of off-axis vortex beams".
- INVITED 26. ISABEL 2010 - Sustainable Communication and Biological Technologies, 7-10 November 2010, Roma Italy. "Practical Quantum Cryptography: The Q-KeyMaker".
- INVITED 27. Dominating the CyberWarfare- 3rd Homeland Security Conference, 9-11 November 2010, Parco Vanvitelliano del Fusaro, piazza Rossini 1, Bacoli (NA). "Practical Quantum Cryptography: The Q-KeyMaker".
- INVITED 28. Crittografia Quantistica Spaziale per Comunicazioni Sicure a Lunga Distanza AFCEA-Capitolo di Roma, 31 March 2011. C4 Difesa, Via Stresa 31b, ROMA. "Quantum Information and Communication Technology at Selex-SI".
- INVITED 29. Fourth Italian Quantum Information Science Conference 2011, 18-20 April 2011, Vietri sul Mare, Salerno, Italy. "Quantum like representation of a Spiral Phase Plate".
30. 13o Convegno Nazionale sulle Tecniche Fotoniche nelle Telecomunicazioni FOTONICA 2011, 9-11 May 2011, Genova, Italy. "Representation of a Spiral Phase Plate as a Two-mode Quantum Phase Operator".
31. 13o Convegno Nazionale sulle Tecniche Fotoniche nelle Telecomunicazioni FOTONICA 2011, 9-11 May 2011, Genova, Italy. "Optical properties of Bacteriorhodopsin by Nonlinear Ellipsometry".
- INVITED 32. Workshop on Singular Optics and its Applications to Modern Physics, The Abdus Salam International Center for Theoretical Physics ICTP, 30 May - 3 June 2011, Trieste, Italy. "Representation of a Spiral Phase Plate as a two mode quantum Phase Operator".
- INVITED 33. Crittografia Quantistica: nuove prospettive per la sicurezza delle comunicazioni, Sala Congressi Luigi Bacci - Centro Direzionale Esagono-Jesi 13 October 2011. "Crittografia Quantistica su Rete Metropolitana: il Q-KeyMaker".
- INVITED 34. 2012 Winter College on Optics: Advances in Nano-Optics and Plasmonics, The Abdus Salam International Center for Theoretical Physics ICTP, 6-17 February 2012, Trieste, Italy. "Application to Quantum Information".
- DIR. 35. Ettore Majorana Foundation and Centre for Scientific Culture organization DIRECTOR of Course ADVANCES ON NANOPHOTONICS -INTERNATIONAL SCHOOL OF QUANTUM ELECTRONICS 52nd Course ADVANCES ON NANOPHOTONICS IV ERICE - SICILY: JULY 17-29 2012 dal 17-07-2012 al 29-07-2012
- INVITED 36. «Ettore Majorana» Foundation and Centre for Scientific Culture, International School of Quantum Electronics 44th Course: Advances on Nanophotonics IV Erice-Sicily: 17 - 29 July 2012. Lecture: "Quantum Interference on Plasmonic Circuits". (INVITED) dal 17-07-2012 al 29-07-2012



- INVITED 37. «Ettore Majorana» Foundation and Centre for Scientific Culture, International School of Quantum Electronics 44th Course: Advances on Nanophotonics IV Erice-Sicily: 17 - 29 July 2012. Lecture: "Representation of a Spiral Phase Plate as a Two-mode Quantum Phase Operator".
- PLENARY 38. Società Italiana di Fisica-XCVIII Congresso Nazionale. Napoli, 17 - 21 September, 2012. Plenary: "Practical Quantum Cryptography".
- INVITED 39. EOS Annual Meeting 2012. Aberdeen, Scotland, 25-28 September, 2012. "Quantum Interference on Plasmonic Circuits".
- INVITED 40. Festival della Scienza 2012. Genova, Italy, 25 October - 4 November 2012. "Security via Uncertainty".
- INVITED 41. ESAS Summer School on New Trends with Superconducting Quantum Detectors at European Society for Applied Superconductivity (ESAS), 9-13 September 2013, Genova Italy. Lecture: "Quantum Cryptography".
- INVITED 42. EOS Topical Meeting on Optics at the Nanoscale (ONS'13) 12-14 September 2013 Capri, Italy, "Plasmonics for quantum Information Processing".
- INVITED 43. IICWG-23 Torino del 9-13 December 2013, "Security via Uncertainty: the Selex ES solution for Quantum Key Distribution (QKD)".
- INVITED 44. IT US DEFENSE SCIENCE & TECHNOLOGY DIALOGUE, 7-11 April 2014, Italian Embassy Washington dc, "Plasmonics for Quantum Computing".
45. FOTONICA 2014, 12-14 May 2014, Napoli Italy. "Controllable Optical Beam Scan by Means of Nanopatterned Plasmonics Device".
- INVITED 46. FOTONICA 2014, 12-14 May 2014, Napoli Italy. "The Q-KeyMaker: Quantum Cryptography Network".
- INVITED 47. 3a edizione SEDA 2014 - Software Engineering for Defence Applications, Circolo Ufficiali delle Forze Armate, 22-23 September, Roma ITALY, "Device Independent Quantum Key Distribution: A Practical System".
- INVITED 48. CLEO/Europe EQEC 2015 Sunday June 21st 2015 Thursday June 25th, 2015 in Munich (ICM) Germany. "Efficient Photonic Quantum Computing".
- INVITED 49. EOS Topical Meeting on Optics at the Nanoscale (ONS'15) 17-19 September 2015 Capri, Italy, "Efficient Quantum Computing".
50. NanoItaly 21-24 September 2015, Sapienza University of Rome Renaissance Cloister by Sangallo. "Efficient Plasmonic Quantum Processor".
51. MAKER FAIRE ROME 2015 Aula Amaldi - Fisica - La "Sapienza" Rome, 16-18 Oct 2015. "Security via Uncertainty".
- INVITED 52. School of Photonics 2016: "Plasmonics and Nano-Optics" July 10th-14th, 2016 Cortona, Italy. Lecture: "Plasmonics Quantum Computing"
53. NanoInnovation 20-23 September 2016, Sapienza University of Rome Renaissance Cloister by Sangallo. "Noise estimation in a bi- photon entangled state".
- KEYNOTE 54. NanoInnovation 20-23 September 2016, Sapienza University of Rome Renaissance Cloister by Sangallo. "NanoPhotonics for Efficient Quantum Computing".
55. NanoInnovation 20-23 September 2016, Sapienza University of Rome Renaissance Cloister by Sangallo. "Hong Ou Mandel experiment on nanoplasmonic device".
- INVITED 56. Workshop on Space Quantum Technologies, ASI Rome, 21-23 March 2017. "On Chip Devices Based on Intrasystem Entanglement". PLENARY 57. CLEO/Europe-EQEC, 2017 Conference on Lasers and Electro-Optics Europe & European Quantum Electronics in Munich (ICM) Germany, 25-29 June 2017. "On Chip Intrasystem Quantum Entangled States Generator".
- INVITED 58. EOS Topical Meeting on Optics at the Nanoscale (ONS'17) 10-14 September 2017, CNR Conference Center - Capri, Italy. "On Chip Intrasystem Quantum Entangled States Generator"
- INVITED 59. Italian-Israeli Workshop in Innovation in Devices and Systems for ICT, Rome/L'Aquila December 1-2 2017, "Practical Device Independent Quantum Key Distribution".
- INVITED 60. FUTURE FORCES FORUM. International Platform for Trends & Technologies in Defence & Security, Prague, Czech Republic, October 17-19, 2018. "Quantum Safe Technologies: novel solutions and paradigms."

61. ICASSP 2019, Brighton UK (15-17 May 2019) In Special Sessions: Emerging Quantum Signal Processing Paradigms. "Intrasytem entanglement generator and unambiguous Bell states discriminator on chip"

62. WorkShop ESA-ASI Optical & Quantum Communication, Roma, 2 July 2019, "Entanglement Engineering for Quantum Communication and Cryptography"

INVITED 63. INCUBate ANd DO, L'Aquila, 17 October 2019 "Quantum circuits for machine learning and cryptography".

KEYNOTE 64. CLEO EUROPE, 21-25 JUNE 2021, "Practical Quantum Communication and Computing".

INVITED 64. EOSAM 2021, Roma, 13-17 September 2019, "Practical Quantum Communication and Computing".

9 SEMINARS

- 29 November 2013 Dept. SBAI, Sapienza Università di Roma - Prof. Giuseppe Palumbo. "The Signature of Quantum Physics".
- 15 November 2013 Dept. SBAI Sapienza Università di Roma - Prof. Giuseppe Palumbo. "Security via Uncertainty: the Amazing Resources of Quantum Physics".
- 29 May 2012 Dept. SBAI, Sapienza Università di Roma - Prof. Giuseppe Palumbo. "Quantum Interference on Plasmonic Circuits".
- 7 June 2010 Dept. SBAI, Sapienza Università di Roma - Prof. Concita Sibilìa. "Practical Quantum Cryptography: The Elsas Datamat Q-KeyMaker".
- 28 April, 8 May, 18 May 2009 Dept. SBAI, Sapienza Università di Roma - Prof. Concita Sibilìa. "Quantum Cryptography: Applicazioni della Quantum Information"
- 17 February 2009 Università del Sannio (Benevento) - Prof. Antonello Cutolo "Crittografia Quantistica: introduzione e stato dell' arte".
- 24 January 2009 Dept. Energetica, Sapienza Università di Roma - Prof. Mario Bertolotti. "Quantum Cryptography".
- 4-6 June 2008 Università di Genova, Scienza dei Materiali, - Prof. Corrado Boragno. "Quantum Entanglement"
- 25 May 2007 Università di Genova, Scienza dei Materiali - Prof. Corrado Boragno. "Photonic Crystals ".
- 26 May 2006 Università di Genova, Scienza dei Materiali - Prof. Corrado Boragno. "Photonic Crystals".
- 22 May 2006 Università di Genova, Scienza dei Materiali, - Prof. Corrado Boragno. "Quantum Cryptography"
- 25 July 2005 INFN, Università di Genova - Prof. Nino Zanghi "Experimental Violation of Entropic Inequalities".
- 7 June 2005 Università di Genova, Scienza dei Materiali, - Prof. Corrado Boragno. "Tecnologie quantistiche di seconda generazione"
- 26 March 2004 Huygens Lab, Leiden (Olanda), Quantum Optics & Quantum Information - Prof. Woerdman. "Demonstration of Entangled-photon link for Quantum Cryptography" .
- 30 October 4 November 2003 Dipartimento di Bio-Elettronica, Università di Genova, Elettronica Industriale -- Prof. Rodolfo Zunino. "Quantum Cryptography".
- 6 -7 November 2002 Dipartimento di Bio-Elettronica, Università di Genova, Elettronica --Prof. Rodolfo Zunino. "Quantum Cryptography".

10 STUDENT SUPERVISION

10.1 II Level Master Thesis Supervisor

Vittorio Calligaris

Marcello Orlandesi

Simone La Riviera

Saverio De Vito

Salvatore De Mattia



Roberto Isabella

Cinzia Crostarosa

Fabio Vilella

Alessandro Vernata

Luciano De Luca

Alessia Di Vito

Roberto Ciliberti

Edoardo Rondoni

10.2 PhD's Thesis Supervisor

2018-2021 Gabriele Riccardi

2010-2012 Matteo Braccini

10.3 Master's Degree Thesis Supervisor

2021 Riccardo Falsini (Sapienza)

2021 Rincy Kunjumon (Sapienza)

2020 Emanuele Bellagamba (Sapienza)

2020 Flavia Santi (Sapienza)

2018 Fabio Vilella (Sapienza)

2017 Gabriele Riccardi (Sapienza)

2016 Roberto Testa (Tor vergata)

2008 Massimiliano Dell'Anna (Genova)

2008 Samuele Ambrosetti (Genova)

2006 Daniela Baggiani (Genova)

2002 Michela di Pace (Tor Vergata)

10.4 Company Stage Supervisor

2008 Mariano Damiani (Genova)

2007 Laura Faure (Genova)

2007 Sivia Berretta (Genova)

2005 Samuele Ambrosetti (Genova)

2005 Massimiliano Dell'Anna (Genova)

2004 Andrea Coccaro (Genova)

2004 Andrea Caviglia (Genova)

2003 Franco Chiaravalloti (Genova)

2003 Nicoletta Garelli (Genova)



I hereby give consent for my personal data included in my application to be processed for the purposes of the recruitment process under the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

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