CURRICULUM VITAE OF GERARDO ADESSO

- **Date and place of birth:** May 16, 1981 in Cava de' Tirreni (SA), Italy.
- **Citizenship:** Italian.
- **Current address:** 71 Fernwood Crescent, Nottingham NG8 2GD, UK.
- **Tel.** +44 07813 108391.
- **Work coordinates:** School of Mathematical Sciences, University of Nottingham, University Park Campus, Nottingham NG7 2RD, UK.
- **Tel.** +44 (0)115 84 66165.
- **email:** gerardo.adesso@nottingham.ac.uk
- **webpage:** http://quantumcorrelations.weebly.com

BRIEF TRACK RECORD

Gerardo Adesso (GA) is a Lecturer (Assistant Professor) in Applied Mathematics at the University of Nottingham since 2009, and leader of the recently established Quantum Correlations group at Nottingham (http://quantumcorrelations.weebly.com), which currently includes four PhD students, one postdoc, several master students and visiting fellows. He held previous positions in Salerno, Rome and Barcelona and a long-term visiting scholarship at DAMTP, Cambridge. He is a recognised expert in the theory and applications of multipartite entanglement and general quantum correlations in composite systems.
GA has a strong track record in quantum information, quantum optics and many-body physics with more than 70 published papers (see Research synopsis and Publications below) and has delivered about 50 invited talks and seminars including one keynote lecture. He has a broad network of active international collaborations with theoretical and experimental groups (>25 institutions worldwide).
He has recently secured three grants as Principal Investigator from the UK EPSRC Research Development Fund (2012-13) on the topic of Quantum Correlations, and is the recipient of a prestigious Nottingham Early Career Research and Knowledge Transfer Award (2011-12), and of a Special Visiting Researcher Award from the Brazilian Science Without Border Agency (2013-15). He has convened a European Science Foundation exploratory workshop in Nottingham on "Signatures of Quantumness in Complex Systems" in June 2011 (http://www.maths.nottingham.ac.uk/personal/ga/SQCS/). He is currently a Co-Chair of the Complex Quantum Systems working group within the European Science Foundation Forward Look Programme FARQUEST (http://www.ait.ac.at/farquest). He is actively involved in outreach and dissemination activities through popular talks, science demonstrations with the public, and web videos on various aspects of physics and mathematics (e.g. http://www.youtube.com/watch?v=D6tINlNluuY, http://www.youtube.com/watch?v=1C_o9Ckhxy0).

Recent research synopsis. GA has recently worked on the characterisation of entanglement and general non-classical correlations in cooperative many-body systems and their applications for quantum communication and quantum information processing. Exploiting information theoretic methods, he tackled issues of quantum metrology, quantum optics, and fundamental aspects of cross-disciplinary fields, including relativity theory. He has contributed to the study of multi-mode harmonic networks, ranging from quantum state engineering, via the investigation of structural properties of distributed entanglement (so-called "monogamy" constraints) and quantum discord, to operational interpretations of quantum correlations and novel protocols for multipartite quantum communication, as well as their realisation in realistic optical settings. His PhD research on entanglement in Gaussian states of harmonic lattices has been welcomed by the international community and has been collected in an invited book chapter and in a subsequent invited review article. He has also contributed to the development of a fully analytic method, based on geometrical reformulations of entropic measures of entanglement, to identify factorised ground states of (in general) not exactly solvable many-body spin models, even affected by frustration. His recent research has been pioneeristic in identifying resources for quantum technology that are more general than entanglement (for example, the quantum discord and similar correlations of nonclassical nature), yet more robust against noise. He has recently provided a universal operational interpretation for general quantum correlations beyond entanglement in generic multipartite quantum states, which is currently subject of experimental demonstration with an integrated quantum optics setup. These results are shedding new light on foundational issues such as the quantum-to-classical transition, and at the same time paving the way for novel applications in quantum technology with noisy resources. He is author of a short essay for the general public, on entanglement, quantumness and their relationships with arts and human society, which was published in a popular magazine, drawing attention from scientists, poets and philosophers alike.

CAREER

- **"Science Without Borders" Special Visiting Researcher**, *Institute of Physics of Sao Carlos, University of Sao Paulo (Brazil)* [2013-2015]
- **Lecturer in Applied Mathematics**, *Quantum Correlations group, Quantum Information, Mathematical Physics, School of Mathematical Sciences, University of Nottingham (UK)* [2009–present];
- **Post-doctoral fellow**, *Quantum Theory group, Faculty of Science, University of Salerno (Italy)*, with Prof. F. Illuminati [apr 2007–dec 2008];
- **Research fellow**, *Quantum Information group, Department of Theoretical Physics, Universitat Autonoma de Barcelona*, with Prof. A. Sanpera [may–aug 2007];
- **Research collaborator**, *Quantum Optics group, Physics Department, "Sapienza" University of Rome*, with Prof. P. Mataloni [nov 2006–apr 2007];
- **Visiting fellow**, *Centre for Quantum Computation (Director: Prof A. Ekert), DAMTP, University of Cambridge (UK)* [nov 2005–oct 2006].

EDUCATION

- ***PhD in Physics*** *(2003-2006)*, Physics Department "E. R. Caianiello", University of Salerno (Italy), awarded on Feb 5, 2007 with excellence; thesis title: *"Entanglement of Gaussian states"*; Advisor: Prof. F. Illuminati.
- ***Laurea in Fisica*** *[MSc Physics] (1999 – 2003)*, Università degli Studi di Salerno (*summa cum laude*).

PROFESSIONAL QUALIFICATIONS

- **Memberships:** Foundational Questions Institute (FQXi). International Association of Mathematical Physics; London Mathematical Society; American Physical Society; Institute of Physics.
- **Academic Editor**: PLoS One; Frontiers of Physics; Entropy (MDPI).
- **EPSRC** Panel Member & Member of the Peer Review College.
- **Reviewer** for EPSRC, Royal Society, and US-Israel Binational Science Foundation;
- **Referee** for: Nature Photon., Nature Commun., Phys. Rev. Lett., Phys. Rev. A, J. Phys. A, J. Phys. B, J. Phys.: Cond. Matt., New J. Phys., Phys. Scr., Centr. Eur. J. Phys., Quant. Inf. Comp., Quant. Inf. Proc., Proc. Roy. Soc. A, J.O.S.A. B, Opt. Lett., Op. Sys. Inf. Dyn., Opt. Express, Entropy, Int. J. Quant. Inf., Int. J. Mod. Phys. B, PLoS One
- **PhD examiner**: 5 thesis examined (2011-13)
- **Supervisor**: 2 postdocs, 5 primary PhD students, 7 co-supervised PhD students, 2 master students, 1 intern, 3 project students, 8 visiting scientists

EVENTS ORGANISATION AND COMMITTEE MEMBERSHIPS

- ***NMR-QIP Conference****, Rio De Janeiro, October 2013 (International Advisory board member)*
- ***Quantum Discussions Workshop****, Institute of Physics of Sao Carlos, University of Sao Paulo, Brazil, 02 August 2013* (co-organiser)
- ***LMS Student Conference on "Mathematical Techniques for Quantum Physics"****, University of Nottingham, 7-9 November 2012* (Chair)
- ***ESF Forward Looking programme FARQUEST****, "A foresight activitiy on research and technology in quantum information science and European strategy", 2011-12* (Co-Chair for the "Complex Quantum Systems" working group)
- ***Mini-workshop: Quantum correlations and information flow in ultracold atomic gases****, Univ. Nottingham, March 5, 2012.* (organiser)
- ***APS March Meeting 2012****, Boston, U.S.* (Chair of the session on Quantum Entanglement)
- ***British Applied Mathematics Colloquium*** (BAMC 2012), *University College London* (organiser of a mini-symposium on "Quantum Information").
- ***Mini-workshop: General quantumness of correlations****, IQC Waterloo, February 23-24, 2012* (co-organiser)
- ***ESF PESC Strategic Workshop on "Signatures of Quantumness in Complex Systems",*** *Nottingham, June 29–July 3, 2011.* (ideator and convener).
- ***Relativistic Quantum Information meeting****, Univ. Nottingham, March 16, 2011.* (co-organiser).

- ***Quantum Stochastics & Information Seminars**, Univ. Nottingham* (coordinator, 2009–2011).
- ***International Conference on Quantum, Nano and Micro Technologies***
  (ICQNM 2008--2013, program committee member)

AWARDS

- ***Funded projects as Principal Investigator:***
  - *"Quantum informational framework for Cybernetics",* **FQXI Large Grant, Physics of Information (2013-15)** *[PI, University of Nottingham],* **$ 90,000**
  - *"Quantum benchmarks – Quality control for realistic quantum devices",* **Tsinghua/Nottingham Research and Teaching Fund 2013** *[PI, University of Nottingham; Co-Investigator: Dr G Chiribella, Institute for Interdisciplinary Information Sciences, Tsinghua University, China],* **£ 5,000**
  - *"Theory and applications of general quantum correlations for quantum information science",* **Special Visiting Researcher Award (2013-15), Brazilian "Science Without Borders Programme", CAPES** *[Awardee, University of Nottingham; Co-Investigators: D. Soares-Pinto, E. R. deAzevedo, T. J. Bonagamba (Sao Paulo, Brazil)*, **~€ 150,000**
  - *"Quantum enhanced technology in noisy systems",* **EPSRC Research Development Fund 2013 – Pump Priming** *[PI, University of Nottingham; Co-Investigators: D. Soares-Pinto, E. R. deAzevedo, T. J. Bonagamba (Sao Paulo, Brazil])*, **£ 7,000**.
  - *"Student Conference on Mathematical Techniques for Quantum Physics"* **London Mathematical Society (2012)** (grant number 81109) *[Chair, University of Nottingham]*, **€ 4,000**
  - *"Quantum correlations in high dimensional systems",* **EPSRC Summer Bursary Project (2012)** *[PI,* awarded for the supervision of a summer student*],* **£ 2,200**
  - *"Quantum correlations and information flow in ultracold atomic gases"*, **EPSRC Research Development Fund 2012 – Bridging the Gaps** *[PI, University of Nottingham; Co-Investigators: Dr A Datta, Prof D Jaksch, Prof C Foot (Oxford), Dr S Maniscalco (Heriot-Watt)]*, **£ 10,315**.
  - *"Quantumness beyond entanglement: fundamentals and applications"*, **EPSRC Research Development Fund 2012 – Pump Priming** *[PI, University of Nottingham; Co-Investigator: Dr M Piani (Institute for Quantum Computing, Waterloo, Canada)]*, **£ 6,000**.
  - *"Interplay between noise and quantum transport in harmonic lattices: Mimicking Nature for quantum technology"*, **Nottingham Early Career Research and Knowledge Transfer Award 2011** *[PI, University of Nottingham],* **£ 24,464**.
  - **ESF PESC Strategic Workshop on Signatures of Quantumness in Complex Systems (2011)** (application number **EW10-090**, **Exploratory Workshop Scheme**) *[Grantee, University of Nottingham]*, **€ 14,000**. Additional sponsorship raised: **€ 10,300** (by IOP, IAMP, AQUTE, Q-ESSENCE).
  - **ESF PESC follow-up funding**, **€ 5,000** awarded for a Forward Look meeting in 2012
  - **Project Consolider-Ingenio 2010**, contract n. CSD2006-0019, QOIT Programme of the European Commission. *[Grantee, Universitat Autonoma Barcelona].*

- ***Prizes:***
  - "E. R. Caianiello" Prize for High School Students (1st place), I.I.A.S.S. Salerno, 1999;
  - Outstanding Physics student award, Univ. of Salerno, 2002;
  - Best career in Physics award, Faculty of Science, Univ. of Salerno, 2006.

TEACHING

- **Lecturer and module convener** for the following undergrad courses at Univ. Nottingham: HG1M12 "Engineering Mathematics 2" (09/10, 10/11, 11/12, 12/13, 13/14); G11LMA "Linear Mathematics" (09/10, 10/11, 11/12); HG1M02 "Applied Algebra for Engineers" (08/09); G12MDE "Modelling with Differential Equations" (12/13); G12IMP "Introduction to Mathematical Physics" (13/14) .
- Vocational guidance **tutor**, class instructor, supervisor and small-group teacher (Salerno, Cambridge, Nottingham; 2003-present).
- **Training**:
  - Small-group teaching (Cambridge 2006),
  - **PGCHE** 30 credits (Nottingham 2011).
  - Member of the Higher Education Academy.

ADMINISTRATION

- **Internship officer**, School of Mathematical Sciences, University of Nottingham (2011-present)
- Member of the **Teaching & Learning board**, School of Math. Sciences, Univ. Nottingham (2011-present)

OUTREACH

- **Teacher** of "Quantum Mechanics: theory and experiments" for top A-level Singapore School 'Reach Cambridge', Girton College, Cambridge (august 2006).
- **Maths & Physics demonstrator** at "Science & Space", "ExpoSchool" (Salerno, Italy, 2004–2007), "Mayfest" (Nottingham 2011 & 2012);
- **Speaker** at Nottingham Open Days 2010, 2011.
- **Quantum Black Market:** Physics expert answering a Q&A session on quantum theory with members of the public, Favignana, Italy June 2012.
- **Acting** in educational videos such as "Core concepts in University Mathematics" (http://www.maths.nottingham.ac.uk/media/Core-topics-in-university-mathematics/) and "Numberphile" (http://www.youtube.com/user/numberphile)

INTERNATIONAL COLLABORATIONS

- University of Salerno, Italy;
- "Sapienza" University of Rome, Italy;
- University of Pavia, Italy;
- University of Milano, Italy;
- University College London, UK;
- Imperial College London, UK;
- University of Cambridge, UK;
- University of Nottingham, UK;
- Queen's University Belfast, UK;
- University of Oxford, UK;
- University of St Andrews, UK;
- University of Bristol, UK;
- University of York, UK
- Heriot-Watt University, UK;
- Palacky University, Czech Republic;
- Universitat Autonoma Barcelona, Spain;
- University of Munich, Germany;
- University of Duesseldorf, Germany;
- University of Uppsala, Sweden;
- ERATO-SORST Tokyo, Japan;
- University Pierre & Marie Curie, Paris;
- Shanxi University, China;
- Tsinghua University, China
- Perimeter Institute, Canada;
- Institute for Quantum Computing, Canada;
- Centre for Quantum Technologies, Singapore;
- Technical University of Gdansk, Poland;
- University of Warsaw, Poland;
- CBPF Rio de Janeiro, Brazil;
- University of Sao Paulo, Brazil.

PUBLICATIONS AND TALKS

- About **80 publications** on international refereed journals including 1 Nature Photon. and **21** Phys. Rev. Lett. of which 1 *Editors' Suggestion* selected for the issue cover (http://prl.aps.org/covers/110/24)
- About **50 invited talks** and seminars (full list attached at the end) including one keynote lecture.
- More than **1500 citations** (source: ISI); **h-index: 20**. *(Google Scholar citations **>2200**)*
- Complete list of publications attached at the end and available here http://scholar.google.com/citations?hl=en&user=jEeD8F8AAAAJ&view_op=list_works&pagesize=100

REFEREES

Name: Professor Fabrizio Illuminati	
Position: Professor of Theoretical Physics	**Relationship to me:** Phd Supervisor

Address: Dipartimento di Ingegneria Industriale University of Salerno Via Ponte Don Melillo 84084 Fisciano (SA), Italy	**Email:** illuminati@sa.infn.it **Telephone Number:** +39 (0)89 96 8206

Name: Professor Anna Sanpera	
Position: ICREA Professor of Physics	**Relationship to me:** Collaborator
Address: Department of Theoretical Physics Universitat Autònoma Barcelona 08193 Bellaterra (Barcelona), Spain	**Email:** sanpera@ifae.es **Telephone Number:** + 34 935 812 843

Name: Professor Andreas Winter	
Position: Professor of Physics of Information	**Relationship to me:** Collaborator
Address: Department of Mathematics University of Bristol University Walk Bristol BS8 1TW, United Kingdom	**Email:** a.j.winter@bris.ac.uk **Telephone Number:** +44(0)117 92 87968

SCHOOLS, CONFERENCES AND SEMINARS: COMPLETE LIST

81) "Quantum metrology embraced for the worst", talk, Noise, Information and Complexity at the Quantum Scale, Erice, October 5-12, 2013
80) "Quantum teleportation benchmarks for Gaussian states", invited seminar, Université Libre de Bruxelles, September 5, 2013
79) "Blind quantum metrology", invited talk, QUISCO Meeting, Heriot-Watt, Edinburgh, August 21, 2013
78) "Characterizing nonclassical correlations via local quantum uncertainty", invited talk, Paraty Workshop on Quantum Information, Brazil, August 12-16, 2013
77) "Quantum information with continuous variables: Gaussian states and beyond", invited cycle of lectures, Paraty Summer School on Quantum Information, Brazil, August 5-9, 2013
76) "Activating entanglement from quantum discord: theory and experiment", invited talk, Quantum Discussions Workshop, Sao Carlo, Brazil, August 2, 2013
75) "Characterizing nonclassical correlations via local quantum uncertainty", invited seminar, Federal University of ABC, Sao Paulo, Brazil, July 18, 2013
74) "The power of the quantum", public lecture, Nottingham Open Day, June 28, 2013
73) "Characterizing nonclassical correlations via local quantum uncertainty", invited talk, Nonlinear Dynamics of Electronics Systems conference, Bari, Italy, July 10-12, 2013
72) "Characterizing nonclassical correlations via local quantum uncertainty", poster, QIPC 2013, University of Florence, Italy, June 30-July 5, 2013
71) "Relativistic Quantum Metrology", invited talk, Relativistic Quantum Information North, University of Nottingham, UK, June 24-27, 2013
70) "Quantum correlations in composite system", invited seminar, IIIS Tsinghua University, Beijing, China, June 19, 2013
69) "Characterizing nonclassical correlations via local quantum uncertainty", invited seminar, Chinese Academy of Sciences, Beijing, China, June 17, 2013
68) "Characterizing nonclassical correlations via local quantum uncertainty", invited talk, 2nd Quantum Twin Workshop on Complex Quantum Systems, Ackergill Tower, Wick, UK, May 27-30, 2013
67) "Amazing quantum correlations", invited distinguished lecture, Science Week, April 2013, University of Goiania, Goias, Brazil

66) “Quantum correlations versus entanglement in multipartite states”, invited seminar, School of Computer Science, University of York, UK
65) “Quantum correlations and quantum communication”, invited lectures, Quantum Snow winter school, February 2013, Asiago, Italy
64) "Nature of light correlations in ghost imaging", invited talk, CVQIP'2013 and mid-term Chistera QSCALE-HIPERCOM meeting, Paris, France, January 30, 2013
63) “Local quantum uncertainty and noisy quantum metrology”, contribution presented to the Topical Research Meetings on Physics: Quantum technologies: taking concepts through to implementations, IOP London, UK
62) "Nature of light correlations in ghost imaging", invited talk, Quantum Optics VI, Piriapolis, Uruguay, November 12-16, 2012
61) "Nature of light correlations in ghost imaging", invited talk, 5th Italian Quantum Information Science Conference, Padova, September 26-28, 2012
60) "Renyi-2 entropy in Gaussian quantum information", invited talk, 4th Nottingham Symposium on Quantum Systems, September 21, 2012
59) "Quantum correlations in composite systems", invited keynote lecture, International Iran Conference on Quantum Information, Tehran, September 8-12, 2012
58) “Quantum correlations: Entanglement and beyond”, invited lectures, Summer School on Quantum Physics and Quantum Information, Palacky University, Olomouc, July 16-20, 2012
57) “Theory of Gaussian quantum information and correlations using the Renyi entropy of order 2”, invited talk, Central European Workshop on Quantum Optics, Sinaia, Romania, 2-6 July, 2012
56) “Quantum correlations in multipartite systems”, invited seminar, University of Palermo, Italy, June 6, 2012
55) “Quantumness of correlations and entanglement are different resources”, invited talk, Quantum Twin Workshop, Favignana, May 31-June 3, 2012
54) “Quantum correlations beyond entanglement”, invited seminar, Centre for Quantum Information and Foundations, DAMTP, University of Cambridge, March 8, 2012
53) “Quantum correlations versus entanglement in composite systems”, invited seminar, Institute for Quantum Computing, Waterloo, Canada, February 23, 2012
52) “Quantum discord: analytic advances”, invited tutorial, Quantum Discord Workshop, Singapore, January 9-13, 2012.
51) “Quantum correlations beyond entanglement”, invited cycle of graduate lectures, Universita’ della Calabria, Cosenza, Italy, December 20-21-22, 2011.
50) “Quantumness versus entanglement in quantum measurements”, invited seminar, Palacky University, Olomouc, CZ, December 7, 2011.
49) Invited to participate in the closed kick-off meeting of the FARQUEST Programme of the European Science Foundation, Geras (Vienna) December 2011
48) “Quantum correlations versus entanglement in multipartite systems”, invited seminar, Atomic & Laser Physics, University of Oxford, November 28 2011.
47) “Observable measure of quantum correlations”, invited talk, University of Heriot-Watt, November 14 2011.
46) “Quantum technology beyond entanglement”, invited Colloquium, University of Glasgow, October 5 2011.
45) “Quantum correlations versus entanglement in quantum measurements”, invited talk, Nottingham Symposium on Quantum Systems, September 22 2011.
44) “How to send quantum messages across spacetime”, invited talk, International Workshop on Relativistic Quantum Information-North, Madrid, September 08 2011.
43) ESF PESC Strategic Workshop on “Signatures of Quantumness in Complex Systems”, convener, Nottingham 29 June – 3 July 2011
42) “Optimal quantum estimation of the Hawking-Unruh effect”, invited talk, Relativistic Quantum Information Mini-Workshop, Madrid, June 22 2011.
41) “All non-classical correlations can be activated into distillable entanglement”, invited talk, QUISCO meeting, St.Andrews, May 24 2011.
40) “All non-classical correlations can be activated into distillable entanglement”, invited talk, 4th Italian Quantum Information Conference, Vietri Sul Mare, April 18-20 2011.
39) “All non-classical correlations can be activated into distillable entanglement”, invited seminar, Quantum Computation & Information group, Bristol, April 06 2011.
38) “Optimal quantum estimation of the Hawking-Unruh effect”, invited talk, Relativistic Quantum Information Mini-Workshop, Nottingham, March 16 2011.

37) “Faithful nonclassicality indicators and extremal two-qubit quantum correlations”, poster, QIP 2011, Singapore, January 10-14 2011.
36) “Ground state factorization versus frustration in spin systems”, invited talk, Queen’s University Belfast, September 14 2010.
35) “Ground state factorization versus frustration in spin systems”, invited talk, “Hamiltonians and Gaps” workshop, Cambridge, September 6-7 2010.
34) “Quantum versus classical correlations in Gaussian states”, invited seminar, Imperial College London, August 10 2010
33) “Entanglement and the quantum wonderland”, public lecture, Nottingham Open Day, June 2010
32) “Extremal entanglement transfer”, poster, TQC2010 Leeds, April 13-15 2010.
31) “Extremal entanglement transfer for quantum state engineering”, invited seminar, MUARC Nottingham, March 17 2010
30) “Extremal entanglement transfer for quantum state engineering”, invited seminar, UCL London, February 4 2010.
29) “Quantum teamwork for unconditional multiparty communication with Gaussian states”, invited talk, QUISCO meeting, St.Andrews, Jan 27 2010.
28) “Quantum teamwork for unconditional multiparty communication with Gaussian states”, talk, IQIS 2009, Pisa, November 5-8 2009.
27) “Quantum teamwork for unconditional multiparty communication with Gaussian states”, invited talk, School and Workshop on Quantum Information, Paraty (Brazil), September 7-11 2009.
26) “Ground state factorization versus frustration in spin systems”, invited seminar, Universitat Autonoma Barcelona, June 2009.
25) “Unleashing Quantum Technology”, invited seminar, University of Nottingham, November 2008.
24) “Non-Gaussianity as a power-up for quantum communication and estimation”, talk, IQIS 2008, Camerino, October 24-29 2008.
23) “Operational quantification of continuous variable correlations”, talk, CEQIP 2008, Telc, June 5-8 2008.
22) “Operational quantification of continuous variable correlations”, poster, QIPC 2007, Barcelona, October 15-19 2007.
21) “The social life of modes”, invited seminar, Universitat Autonoma Barcelona, May 2007.
20) “Strong monogamy of bipartite and multipartite entanglement: the Gaussian case”, talk given at IQING5, Innsbruck, April 11-14 2007.
19) “Strong monogamy of bipartite and multipartite entanglement: the Gaussian case”, talk given at the Workshop on Quantum Information and Many-Body Quantum Systems, Centro De Giorgi, Pisa (Italy), March 26-30 2007.
18) “Promiscuous entanglement”, invited seminar, University College London (UK), October 2 2006.
17) “Multipartite entanglement sharing in Gaussian states”, invited talk, Institute for Quantum Computing (IQC), University of Waterloo (Canada), September 2006.
16) “Entanglement in Gaussian matrix product states”, invited talk, Workshop on Theory and Technology in Quantum Information, Communication, Computation and Cryptography, ICTP - Trieste (Italy), June 2006.
15) “Entanglement distribution in Gaussian valence bond states”, poster presented at XXXVIII Symposium on Mathematical Physics: Quantum Entanglement & Geometry, Torun (Poland), June 04-08 2006.
14) “Entanglement in Gaussian valence bond states”, invited talk, XI International Conference on Quantum Optics (ICQO 2006), Minsk (Belarus), May 26-31 2006.
13) “Multipartite entanglement of Gaussian states of continuous-variable systems”, invited seminar, QCI – University of Bristol (UK), April 5 2006.
12) Attendance at QIP 2006, Paris, January 16-20 2006.
11) “Bipartite and multipartite entanglement in Gaussian states of continuous variable systems”, invited talk given at ISSQUI05, Dresden, September 25 - October 01 2005.
10) “Bipartite and Multipartite Entanglement of Gaussian States: theory and applications”, invited seminar, Centre for Quantum Computation (CQC), DAMTP, University of Cambridge (UK), September 07 2005
09) “Gaussian states of continuous variable systems” (joint tutorial with A. Serafini), talk given at IQING4, Paris, July 23-25 2005
08) “Optimal use of multipartite entanglement for continuous variable teleportation”, poster presented at the Conference ‘Quantum Physics of Nature’ (QUPON), Vienna, May 20-26 2005.
07) “Optimal use of multipartite entanglement for continuous variable teleportation”, poster presented at QIP 2005 Conference, M.I.T. - Cambridge (MA), USA, January 13-17 2005.

06) “Optimal use of multipartite entanglement for continuous variable teleportation”, poster presented at the workshop on Entanglement in Physical and Information Sciences, Centro De Giorgi - Pisa, December 14-18 2004.
05) “Multipartite Entanglement of Gaussian States”, invited seminar, Lab. Kastler-Brossel, Jussieu - Paris, November 17 2004.
04) “Quantification and scaling of multipartite entanglement in continuous variable systems”, poster presented at School and Workshop on Quantum Entanglement (SMR1587), ICTP – Trieste (Italy), November 1-12 2004.
03) “Quantification and scaling of multipartite entanglement in continuous variable systems”, poster presented at QIPC5, Rome, September 20-22 2004.
02) “Entanglement and Mixedness in Continuous Variable Systems”, talk given at EIN04, Krzyzowa, June 14-20 2004.
01) “Characterizing entanglement with entropic measures in discrete and continuous variable systems”, poster presented at CVQIP04, Veilbronn, April 02-05 2004.

PUBLICATIONS: COMPLETE LIST

Preprints

81) G. Adesso, V. D’Ambrosio, E. Nagali, M. Piani, F. Sciarrino; *Experimental entanglement activation from discord in a programmable quantum measurement*; under review in Nature Photonics (2013)
80) M. Ahmadi, D. E. Bruschi, N. Friis, C. Sabin, G. Adesso, I. Fuentes; *Relativistic quantum metrology: exploiting relativity to improve quantum measurement technologies*; submitted to New J. Phys, arXiv:1307.7082 (2013)
79) G. Adesso, S. Piano; *Genuine tripartite nonlocality of Gaussian states*; submitted to Phys. Rev. Lett., arXiv:1307.3288 (2013)
78) J. Doukas, G. Adesso, S. Pirandola, A. Dragan; *Discriminating quantum field theories in curved spacetimes*; submitted to Phys. Rev. Lett., arXiv:1306.4474 (2013)
77) G. Adesso; *The social aspects of quantum* entanglement; arXiv:0706.0286, published in "Ordint la Trama", n. 56, pag. 3 (june 2007)

Refereed papers in journals

76) B. Aaronson, R. Lo Franco, G. Compagno, G. Adesso; *Hierarchy and dynamics of trace distance correlations*; New J. Phys. **15**, 0903022 (2013)
75) B. Aaronson, R. Lo Franco, G. Adesso; *Comparative investigation of the freezing phenomena for quantum correlations under nondissipative decoherence*; Phys. Rev. A **88**, 012120 (2013)
74) T. Nakano, M. Piani, G. Adesso; *Negativity of quantumness and its interpretations*; Phys. Rev. A **88**, 012117 (2013)
73) T. Tufarelli, T. MacLean, D. Girolami, R. Vasile, G. Adesso; *The geometric approach to quantum correlations: computability versus reliability*; J. Phys. A: Math. Theor. **46**, 275308 (2013)
72) D. Girolami, T. Tufarelli, G. Adesso; *Characterizing Nonclassical Correlations via Local Quantum Uncertainty*; Phys. Rev. Lett. **110**, 240402 (2013); Editors' Suggestion and Cover Article
71) S. Piano, G. Adesso; *Genuine tripartite entanglement and nonlocality in Bose-Einstein condensates by collective atomic recoil*; Entropy **15**, 1875 (2013)
70) L. A. Correa, J. P. Palao, G. Adesso, D. Alonso; *Performance bound for quantum absorption refrigerators*; Phys. Rev. E **87**, 042131 (2013)
69) I. A. Silva, D. Girolami, R. Auccaise, R. S. Sarthour, I. S. Oliveira, T. J. Bonagamba, E. R. deAzevedo, D. O. Soares-Pinto, G. Adesso; *Measuring Bipartite Quantum Correlations of an Unknown State*; Phys. Rev. Lett. **110**, 140501 (2013)
68) S. Ragy, G. Adesso; *Unveiling the Hanbury Brown and Twiss effect through Renyi entropy correlations*; Phys. Scr. **T153**, 014052 (2013)
67) S. Zippilli, M. Paternostro, G. Adesso, F. Illuminati; *Entanglement Replication in Driven Dissipative Many-*

Body Systems; Phys. Rev. Lett. **110**, 040503 (2013)

66) M. G. Genoni, M. G. A. Paris, G. Adesso, H. Nha, P. L. Knight, M. S. Kim; *Optimal estimation of joint parameters in phase space*; Phys. Rev. A **87**, 012107 (2013)

65) P. Bowles, M. Guta, G. Adesso; *Asymptotically optimal quantum channel reversal for qudit ensembles and multimode Gaussian states*; New J. Phys. **14**, 113041 (2012)

64) T. Tufarelli, D. Girolami, R. Vasile, S. Bose, G. Adesso; *Quantum resources for hybrid communication via qubit-oscillator states*; Phys. Rev. A **86**, 052326 (2012)

63) D. Girolami, R. Vasile, G. Adesso; *Theoretical insights on measuring quantum correlations*; Int. J. Mod. Phys. B **27**, 1345020 (2012)

62) G. Adesso, D. Girolami, A. Serafini; *Measuring Gaussian Quantum Information and Correlations Using the Renyi Entropy of Order 2*; Phys. Rev. Lett. **109**, 190502 (2012)

61) G. Adesso, S. Ragy, D. Girolami; *Continuous variable methods in relativistic quantum information: characterization of quantum and classical correlations of scalar field modes in noninertial frames*; Class. Quantum Grav. **29**, 224002 (2012)

60) M. Borrelli, C. Sabin, G. Adesso, F. Plastina, S. Maniscalco; *Dynamics of atom-atom correlations in the Fermi problem*; New J. Phys. **14**, 103010 (2012)

59) S. Ragy, G. Adesso; *Nature of light correlations in ghost imaging*; Sci. Rep. **2**, 651 (2012)

58) G. Adesso, D. Girolami; *Quantum optics: Wave-particle superposition*; Nature Photon. **6**, 579 (2012)

57) S. Piano, A.W. Rushforth, K.W. Edmonds, R.P. Campion, G. Adesso, B.L. Gallagher; *Analysing surface structures on (Ga, Mn) As by Atomic Force Microscopy*; J. Nanosci. Nanotech. **12**, 7545 (2012)

56) A. Streltsov, G. Adesso, M. Piani, D. Bruss; *Are General Quantum Correlations Monogamous?*; Phys. Rev. Lett. **109**, 050503 (2012)

55) D. Girolami, G. Adesso; *Observable Measure of Bipartite Quantum Correlations*; Phys. Rev. Lett. **108**, 150403 (2012)

54) M. Piani, G. Adesso; *Quantumness of correlations revealed in local measurements exceeds entanglement*; Phys. Rev. A **85**, 040301(R) (2012)

53) R. Tatham, L. Mista Jr., G. Adesso, N. Korolkova; *Nonclassical correlations in continuous-variable non-Gaussian Werner states*; Phys. Rev. A **85**, 022326 (2012)

52) D. Girolami, G. Adesso; *Interplay between computable measures of entanglement and other quantum correlations*; Phys. Rev. A **84**, 052110 (2011)

51) S. Gharibian, M. Piani, G. Adesso, J. Calsamiglia, P. Horodecki; *Characterizing quantumness via entanglement creation*; Int. J. Quant. Inf. **9**, 1701 (2011)

50) G. Adesso, D. Girolami; *Gaussian geometric discord*; Int. J. Quant. Inf. **9**, 1773 (2011)

49) P. Bowles, M. Guta, G. Adesso; *Asymptotically optimal purification and dilution of mixed qubit and Gaussian states*; Phys. Rev. A **84**, 022320 (2011)

48) A. Monras, G. Adesso, S. M. Giampaolo, G. Gualdi, G. B. Davies, F. Illuminati; *Entanglement quantification by local unitary operations*; Phys. Rev. A **84**, 012301 (2011)

47) M. Piani, S. Gharibian, G. Adesso, J. Calsamiglia, P. Horodecki, A. Winter; *All Nonclassical Correlations Can Be Activated into Distillable Entanglement*; Phys. Rev. Lett. **106**, 220403 (2011)

46) D. Girolami, G. Adesso; *Quantum discord for general two-qubit states: Analytical progress*; Phys. Rev. A **83**, 052108 (2011)

45) L. Mista Jr., R. Tatham, D. Girolami, N. Korolkova, G. Adesso; *Measurement-induced disturbances and nonclassical correlations of Gaussian states*; Phys. Rev. A **83**, 042325 (2011)

44) G. Adesso; *Simple proof of the robustness of Gaussian entanglement in bosonic noisy channels*; Phys. Rev. A **83**, 024301 (2011)

43) D. Girolami, M. Paternostro, G. Adesso; *Faithful non-classicality indicators and extremal quantum correlations in two-qubit states*; J. Phys. A: Math. Theor. **44**, 352002 (2011), Fast Track Communication

42) F. Dell'Anno, S. De Siena, G. Adesso, F. Illuminati; *Teleportation of squeezing: Optimization using non-Gaussian resources*; Phys. Rev. A **82**, 062329 (2010)

41) M. Guta, P. Bowles, G. Adesso; *Quantum teleportation benchmarks for independent and identically-distributed spin states and displaced thermal states*; Phys. Rev. A **82**, 042310 (2010)

40) M. Aspachs, G. Adesso, I. Fuentes; *Optimal Quantum Estimation of the Unruh-Hawking Effect*; Phys. Rev. Lett. **105**, 151301 (2010)

39) G. Adesso, A. Datta; *Quantum versus classical correlations in Gaussian states*; Phys. Rev. Lett. **105**,

030501 (2010)

38) G. Adesso, S. Campbell, F. Illuminati, M. Paternostro; *Controllable Gaussian-qubit interface for extremal quantum state engineering*; Phys. Rev. Lett. **104**, 240501 (2010)

37) S. M. Giampaolo, G. Adesso, F. Illuminati; *Probing Quantum Frustrated Systems via Factorization of the Ground State*; Phys. Rev. Lett. **104**, 207202 (2010)

36) M. Paternostro, G. Adesso, S. Campbell; *Passing quantum correlations to qubits using any two-mode state*; Phys. Rev. A **80**, 062318 (2009)

35) J. Zhang, G. Adesso, C. Xie, K. Peng; *Quantum Teamwork for Unconditional Multiparty Communication with Gaussian States*; Phys. Rev. Lett. **103**, 070501 (2009)

34) S. M. Giampaolo, G. Adesso, F. Illuminati; *Separability and ground-state factorization in quantum spin systems*; Phys. Rev. B **79**, 224434 (2009)

33) G. Adesso, I. Fuentes-Schuller; *Correlation loss and multipartite entanglement across a black hole horizon*; Quant. Inf. Comput. **9**, 0657 (2009)

32) G. Adesso, F. Dell'Anno, S. De Siena, F. Illuminati, L. A. M. Souza; *Optimal estimation of losses at the ultimate quantum limit with non-Gaussian states*; Phys. Rev. A **79**, 040305(R) (2009)

31) G. Adesso; *Experimentally friendly bounds on non-Gaussian entanglement from second moments*; Phys. Rev. A **79**, 022315 (2009)

30) G. Adesso, F. Illuminati; *Genuine multipartite entanglement of symmetric Gaussian states: Strong monogamy, unitary localization, scaling behavior, and molecular sharing structure*; Phys. Rev. A **78**, 042310 (2008)

29) R. Neigovzen, C. Rodo', G. Adesso, A. Sanpera; *Multipartite continuous-variable solution for the Byzantine agreement problem*; Phys. Rev. A **77**, 062307 (2008)

28) S. M. Giampaolo, G. Adesso, F. Illuminati; *Theory of Ground State Factorization in Quantum Cooperative Systems*; Phys. Rev. Lett. **100**, 197201 (2008)

27) G. Adesso, G. Chiribella; *Quantum Benchmark for Teleportation and Storage of Squeezed States*; Phys. Rev. Lett. **100**, 170503 (2008)

26) C. Rodo', G. Adesso, A. Sanpera; *Operational Quantification of Continuous-Variable Correlations*; Phys. Rev. Lett. **100**, 110505 (2008)

25) G. Adesso, F. Illuminati; *Bipartite and Multipartite Entanglement of Gaussian States*; in *Quantum Information with Continuous Variables of Atoms and Light* [Chapter 1, page 1], edited by N. Cerf, G. Leuchs, E. Polzik (Imperial College Press, London, 2007)

24) G. Adesso, I. Fuentes-Schuller, M. Ericsson; *Continuous-variable entanglement sharing in noninertial frames*; Phys. Rev. A **76**, 062112 (2007)

23) G. Adesso, S. M. Giampaolo, F. Illuminati; *Geometric characterization of separability and entanglement in pure Gaussian states by single-mode unitary operations*; Phys. Rev. A **76**, 042334 (2007)

22) G. Adesso, F. Illuminati; *Strong Monogamy of Bipartite and Genuine Multipartite Entanglement: The Gaussian Case*; Phys. Rev. Lett. **99**, 150501 (2007)

21) G. Adesso, M. Ericsson; *Optical implementation and entanglement distribution in Gaussian valence bond states*; Opt. Spectrosc. **103**, 178 (2007)

20) G. Adesso, M. Ericsson, F. Illuminati; *Coexistence of unlimited bipartite and genuine multipartite entanglement: Promiscuous quantum correlations arising from discrete to continuous-variable systems*; Phys. Rev. A **76**, 022315 (2007)

19) A. Serafini, G. Adesso; *Standard forms and entanglement engineering of multimode Gaussian states under local operations*; J. Phys. A **40**, 8041 (2007)

18) G. Adesso, F. Illuminati; *Entanglement in continuous-variable systems: recent advances and current perspectives*; J. Phys. A **40**, 7821 (2007)

17) G. Adesso, A. Serafini, F. Illuminati; *Continuous variable quantum information with three-mode Gaussian states: allotment, trade-off, teleportation, and telecloning*; ICQNM`07, 7 (2007)

16) G. Adesso, A. Serafini, F. Illuminati; *Optical state engineering, quantum communication, and robustness of entanglement promiscuity in three-mode Gaussian states*; New J. Phys. **9**, 60 (2007)

15) T. Hiroshima, G. Adesso, F. Illuminati; *Monogamy Inequality for Distributed Gaussian Entanglement*; Phys. Rev. Lett. **98**, 050503 (2007)

14) G. Adesso; *Generic Entanglement and Standard Form for N-Mode Pure Gaussian States*; Phys. Rev. Lett. **97**, 130502 (2006)

13) G. Adesso, M. Ericsson; *Entanglement in Gaussian matrix-product states*; Phys. Rev. A **74**, 030305(R)

(2006)

12) G. Adesso, F. Illuminati; *Continuous variable tangle, monogamy inequality, and entanglement sharing in Gaussian states of continuous variable systems*; New J. Phys. **8**, 15 (2006)

11) G. Adesso, F. Illuminati; *Entanglement sharing: from qubits to Gaussian states*; Int. J. Quant. Inf. **4**, 383 (2006)

10) G. Adesso, A. Serafini, F. Illuminati; *Multipartite entanglement in three-mode Gaussian states of continuous-variable systems: Quantification, sharing structure, and decoherence*; Phys. Rev. A **73**, 032345 (2006)

9) G. Adesso, F. Illuminati; *Gaussian measures of entanglement versus negativities: Ordering of two-mode Gaussian states*; Phys. Rev. A **72**, 032334 (2005)

8) G. Adesso, F. Illuminati; *Equivalence between Entanglement and the Optimal Fidelity of Continuous Variable Teleportation*; Phys. Rev. Lett. **95**, 150503 (2005)

7) J. Laurat, G. Keller, J.A. Oliveira Huguenin, C. Fabre, T. Coudreau, A. Serafini, G. Adesso, F. Illuminati; *Entanglement of two-mode Gaussian states: characterization and experimental production and manipulation*; J. Opt. B: Quantum Semiclassical Opt. **7**, S577 (2005)

6) G. Adesso, A. Serafini, F. Illuminati; *Entanglement, Purity, and Information Entropies in Continuous Variable Systems*; Open Syst. Inf. Dyn. **12**, 189 (2005)

5) A. Serafini, G. Adesso, F. Illuminati; *Unitarily localizable entanglement of Gaussian states*; Phys. Rev. A **71**, 032349 (2005)

4) G. Adesso, A. Serafini, F. Illuminati; *Quantification and Scaling of Multipartite Entanglement in Continuous Variable Systems*; Phys. Rev. Lett. **93**, 220504 (2004)

3) G. Adesso, A. Serafini, F. Illuminati; *Extremal entanglement and mixedness in continuous variable systems*; Phys. Rev. A **70**, 022318 (2004)

2) G. Adesso, A. Serafini, F. Illuminati; *Determination of Continuous Variable Entanglement by Purity Measurements*; Phys. Rev. Lett. **92**, 087901 (2004)

1) G. Adesso, F. Illuminati, S. De Siena; *Characterizing entanglement with global and marginal entropic measures*; Phys. Rev. A **68**, 062318 (2003)

Refereed contributions in books

25) G. Adesso, F. Illuminati; *Bipartite and Multipartite Entanglement of Gaussian States*; in *Quantum Information with Continuous Variables of Atoms and Light* [Chapter 1, page 1-21], edited by N. Cerf, G. Leuchs, E. Polzik (Imperial College Press, London, 2007)