

Serena CENATIEMPO

PERSONAL DATA

BIRTH: Napoli (IT) – December 20, 1983
CITIZEN: Italian
CIVIL STATUS: married, 2 children
born on 31/10/2015 and 4/7/2019
ADDRESS: Gran Sasso Science Institute, 67100 L'Aquila (IT)
EMAIL: serena.cenatiempo@gssi.it
TEL: +39 0862 428 0276
WEBPAGE: <http://www.serenacenatiempo.it>
ORCID: 0000-0002-8667-8300
LANGUAGES: Italian (mother tongue), English (fluent),
German (intermediate), French (elementary)



ACADEMIC POSITIONS

02/2019 –	<i>Gran Sasso Science Institute, School of advanced studies (IT), Researcher (RtdA), Mathematics Area</i>
03/2016 – 01/2019	<i>Gran Sasso Science Institute, School of advanced studies (IT), Postdoc, Mathematics Area</i>
02/2014 – 02/2016	<i>Institute of Mathematics, University of Zurich (CH), Postdoc, research group of Prof. Benjamin Schlein</i>
06/2013 – 01/2014	<i>Hausdorff center for Mathematics, University of Bonn (DE), Hausdorff postdoc, research group of Prof. Benjamin Schlein</i>
11/2012 – 05/2013	<i>Department of Mathematics, University of Roma Tre (IT), Research fellow, research group of Prof. Alessandro Giuliani</i>

EDUCATION

02/2013	<i>Ph.D. degree – Sapienza, University of Rome (IT)</i> Thesis: Low dimensional interacting bosons Advisor: Prof. Alessandro Giuliani.
10/2008	<i>Master degree (110/110 cum laude), University of Napoli Federico II (IT)</i> Thesis: Models for metastable states, resonances and anelastic scattering in Quantum Mechanics Advisor: Prof. Rodolfo Figari
03/2006	<i>Bachelor degree (110/110 cum laude), University of Napoli Federico II (IT)</i> Thesis: Models for the measurement process in Quantum Mechanics Advisor: Prof. Rodolfo Figari

HONORS

2019 Invited speaker for the topical session on Mathematical Physics
of the *Congress of the Italian Mathematical Union*, Pavia (IT)

2018 Invited speaker for the topical session Equilibrium Statistical Mechanics
of the *International Congress on Mathematical Physics*, Montreal (CA)

FELLOWSHIPS AND GRANTS

- 08/2019 - 07/2020 PI for the project *Derivation of effective theories for large quantum systems*, funded by the Italian Group for Mathematical Physics, 3 participants
- 10/2018 Cambridge Philosophical Society (CPS) bursary at Isaac Newton Institute
- Spring 2015 Selected for the GSSI postdoc fellowship, GSSI L'Aquila (IT)
- Spring 2013 Selected for the Hausdorff Postdoc fellowship, Hausdorff Center for Mathematics, University of Bonn (DE)
- 03/2011 Oberwolfach Leibniz Graduate Student, workshop *The Renormalization Group*
- 10/2008 Selected for a Ph.D. scholarship, Sapienza University of Rome

PUBLICATIONS AND PREPRINTS

- [1] *Bogoliubov theory for dilute bose gases: the Gross-Pitaevskii Regime*, contribution to Proceedings of the International Congress of Mathematical Physics 2018, J. Math. Phys. 60(8): 081901 (2019)
- [2] *Bogoliubov Theory in the Gross-Pitaevskii Limit*, with C. Boccato, C. Brennecke and B. Schlein, Acta Mathematica 222(2), 219–335 (2019)
- [3] *Optimal Rate for Bose-Einstein Condensation in the Gross-Pitaevskii Regime*, with C. Boccato, C. Brennecke and B. Schlein, math-ph/1812.03086, accepted for publication on Commun. Math. Phys. (2019)
- [4] *Universal low-energy behaviour in a quantum Lorentz gas with Gross-Pitaevskii potentials*, with G. Basti and S. Teta, Math. Phys. Anal. Geom. 21(11), (2018)
- [5] *The excitation spectrum of Bose gases interacting through singular potentials*, with C. Boccato, C. Brennecke and B. Schlein, math-ph/1704.04819, accepted for publication on J. Eur. Math. Soc. (2018)
- [6] *Complete Bose-Einstein condensation in the Gross-Pitaevskii regime*, with C. Boccato, C. Brennecke and B. Schlein, Commun. Math. Phys. 359(3): 975-1026 (2018)
- [7] *Analysis of fluctuations around non linear effective dynamics*, contribution to the volume “Advances in Quantum Mechanics: Contemporary Trends and Open Problems”, G. Dell’Antonio and A. Michelangeli eds., Springer-INdAM series (2017)
- [8] *Quantum Many-Body Fluctuations Around Nonlinear Schrödinger Dynamics*, with C. Boccato and B. Schlein, Ann. Henri Poincaré 18: 113 (2017)
- [9] *Renormalization theory of a two dimensional Bose gas: quantum critical point and quasi-condensed state*, with A. Giuliani, Jour. Stat. Phys. 157, 755-829 (2014)
- [10] *Low dimensional interacting bosons*. PhD Thesis, math-ph/1211.3772

DISTINGUISHED VISITING PERIODS

- 2019 Mittag-Leffler Institute, Djursholm (SE), 2 weeks
within the program *Spectral methods in Mathematical Physics*
- 2018 Isaac Newton Institute, Cambridge (UK), 3 weeks
within the program *Scaling limits, rough paths, quantum field theory*
- CRM Montreal (CA), 1 week
within the program *Mathematical challenges in many-body physics and quantum information*
- 2012 Hausdorff Center for Mathematics, Bonn (DE), 3 weeks
within the program *Mathematical challenges of materials science and condensed matter physics: from quantum mechanics through statistical mechanics to nonlinear PDE*

INVITED LECTURES

- July 2017 One lecture “From the quantum many particle system to the non-linear Schrödinger equation”,
within the graduate school on *Non linear dispersive PDE, quantum many particle systems
and the world between*, Cortona (IT)
- Sep. 2016 Short class on “Gross-Pitaevskii equation from Quantum Dynamics”
Sapienza, Università di Roma (IT)
- Apr. 2015 Two lectures on “Quantum Fluctuations around the Gross-Pitaevskii Dynamics”
University of Stuttgart (DE)

SELECTED TALKS

- 2019 - The Analysis of Complex Quantum Systems: Large Coulomb Systems and Related Matters,
CIRM (FR) - *invited speaker*
- Congress of the Italian Mathematical Union, Pavia (IT)
invited speaker for the session on Mathematical Physics
- Venice 2019 - Quantissima in the Serenissima III, Venice (IT) - *invited speaker*
- Many-body theory, effective equations & PDE's, Mittag-Leffler Institute,
Stockholm (SE) - *invited speaker*
- Institut Henri Poincaré, Paris (FR) - *invited speaker*
seminars on Spectral problems in mathematical physics
- Laboratoire de Physique et Modélisation des Milieux Condensés, Grenoble (FR) - *seminar*
- 2018 - Meeting of the Italian Association in Mathematical Physics (GNFM),
Montecatini (IT) - *contributed talk*
- Many-Body Quantum Mechanics, Montreal (CA) - *invited speaker*
- International Conference on Mathematical Physics, Montreal (CA)
invited speaker for the session Equilibrium Statistical Mechanics
- 2017 - Mathematical Questions and Challenges in Quantum Electrodynamics and its Applications,
Oberwolfach (DE) - *invited speaker*
- Quantissima in the Serenissima II, Venice (IT) - *invited speaker*
- Non linear dispersive PDE, quantum many particle systems and the world between,
Cortona (IT) - *invited speaker*
- Trieste Quantum Days 2017, Trieste (IT) - *invited speaker*
- 2016 - Sapienza, University of Rome (IT) - *seminar*
- Contemporary Trends in the Mathematics of Quantum Mechanics, Rome (IT) - *invited speaker*
- SISSA, Trieste (IT) - *seminar*
- GSSI, L'Aquila (IT) - *seminar*

- 2015 - Renormalization in Statistical Physics and Lattice Field Theories, Montpellier (FR) - *invited speaker*
- Trials in Quantum Mechanics and Surroundings 2015, Como (IT) - *invited speaker*
- LMU, Munich (DE) - *seminar*
- 2014 - Mathematical Physics, Analysis and Stochastics, Heidelberg (DE) - *contributed talk*
- Many-Body Quantum Systems, Warwick (UK) - *invited speaker*
- University of Roma Tre (IT) - *seminar*
- 2013 - ETH-Zurich (CH) - *seminar*
- 2012 - University of Milano (IT) - *seminar*
- International Congress on Mathematical Physics 2012, Aalborg (DK), *contributed talk* within the topical session *Quantum many-body theory and condensed matter physics*
- Quantum Mechanics and surroundings, L'Aquila (IT) - *contributed talk*

EVENTS BY INVITATION

- Sep. 2019 Workshop *Many-Body Quantum Systems and Effective Theories*, Oberwolfach (DE) - 1 week (declined, due to maternity leave)
- Sep. 2018 Workshop *Many-Body Quantum Mechanics*, Montreal (CA) - 1 week
- Sep. 2017 Workshop *Mathematical Questions and Challenges in Quantum Electrodynamics and its Applications*, Oberwolfach (DE) - 1 week
- Sep. 2016 Workshop *Many-Body Quantum Systems and Effective Theories*, Oberwolfach (DE) - 1 week
- Feb. 2013 Workshop *Equilibrium statistical mechanics*, CIRM Marsiglia (FR) - 1 week
- May 2016 Workshop *The Renormalization Group*, Oberwolfach (DE) - 1 week
- Mar. 2011 Workshop *The Renormalization Group*, Oberwolfach (DE) - 1 week

TEACHING

- 2017 – 2020 Ph.D classes held at GSSI, L'Aquila (IT)
 - *Quantum Mechanics*
 - *Introduction to quantum many particle problems*
 - *Effective equations for many body quantum systems*
 - *Bose-Einstein condensation and Bogoliubov theory*
- 2014 – 2015 Teaching assistant at the Institute of Mathematics, University of Zurich (CH)
 - *Analysis 3* (2nd year class, ODEs and measure theory)
 - *Thomas-Fermi and Hartree-Fock theory for atoms and molecules* (Master and PhD course)
- 2010 – 2012 Teaching assistant at University Campus Biomedico, Rome (IT)
 - *Mechanics and Thermodynamics* (1st year class - Department of Engineering)
 - *Physics 1* (1st year class, Mechanics, Thermodynamics, Electromagnetism and Optics - Department of Medicine)

TUTORING

- PhD supervision of *Cristina Caraci*, Ph.D. student at Gran Sasso Science Institute since 1/11/2017

REVIEWING ACTIVITY

- Referee for the following international journals: *Annales Henri Poincaré*, *Communications in Mathematical Physics*, *Journal of Statistical Physics*, *Review in Mathematical Physics*
- Referee for Springer proceedings series

ORGANIZATIONAL ACTIVITIES

Part of the scientific and organizing committee for the following workshops and schools:

- Statistical and Quantum Mechanics: reconsidering their foundations in the light of new cutting edge experiments and theoretical models, *GSSI L'Aquila (IT)*, September 23-25, 2020
- Gran Sasso Quantum Meetings: from equilibrium phenomena to open quantum systems, *GSSI L'Aquila (IT)*, March 30- April 3, 2020
- Effective equations: frontiers in classical and quantum systems *Hausdorff research Institute for Mathematics, Bonn (DE)*, June 24-28, 2019
- Journeys of women in Mathematics, in honor to Maryam Mirzakhani, *University of L'Aquila (IT)*, May 9, 2019
- Gran Sasso Quantum Meetings: from many particle systems to quantum fluids, *GSSI L'Aquila (IT)*, November 28- December 1, 2018
- EMS-IAMP Summer School in Mathematical Physics Universality in Probability Theory and Statistical Mechanics, *Ischia (IT)* June 11-15, 2018
- Women in applied and computational Mathematics, *GSSI L'Aquila (IT)*, May 9-11, 2018

MEMBERSHIP OF MATHEMATICAL ASSOCIATIONS

2019 – to date	Unione Matematica Italiana (UMI) <i>Union of Italian Mathematicians</i>
2012 – to date	International Association of Mathematical Physics (IAMP)
2010 – to date	Gruppo Nazionale Fisica Matematica (GNFM) <i>Italian National Group of Mathematical Physics</i>

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