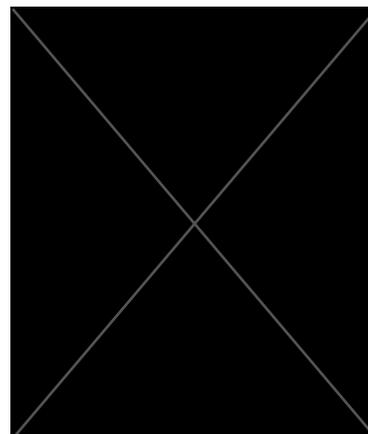


GIULIA BASTI

CURRICULUM VITAE AI FINI DELLA PUBBLICAZIONE

GENERAL INFORMATION

FULL NAME: Giulia Basti
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
PERSONAL WEBPAGE: sites.google.com/view/giulia-basti/homepage
ORCID ID: 0000-0002-3745-6293
SCOPUS AUTHOR ID: 57196051645
SPOKEN LANGUAGES: Italian (mother tongue), English (fluent),
German (basic)



EDUCATION

18/01/2018 **Ph.D. in Mathematics**

Sapienza, University of Rome (IT)

Thesis: Low Energy Behavior in Few-Particle Quantum Systems:
Efimov Effect and Zero-Range Interactions

Supervisor: Alessandro Teta

Classification: Excellent

29/10/2014 **Master degree in Mathematics**

Sapienza, University of Rome (IT)

Thesis: Hamiltoniane quantistiche con interazioni a zero-range per il problema dei tre corpi
(transl.: Quantum Hamiltonian with point interactions for the three-body problem)

Supervisor: Alessandro Teta

Final mark: 110/110 cum laude

25/09/2012 **Bachelor degree in Mathematics**

Sapienza, University of Rome (IT)

Thesis: Il modello di Cucker e Smale per la dinamica degli stormi
(transl.: Cucker-Smale model for flocks dynamics)

Supervisor: Paolo Buttà

Final mark: 110/110 cum laude

05/2023 – Present	Researcher (Ricercatore a Tempo Determinato, tipo “A”) <i>Gran Sasso Science Institute, School of advanced studies (IT) – Mathematics Area</i>
12/2020 – 04/2023	Researcher (Assegnista di ricerca) <i>Gran Sasso Science Institute, School of advanced studies (IT) – Mathematics Area</i>
12/2017 – 11/2020	PostDoc <i>University of Zurich (CH) – Institute of Mathematics</i> Part of the research group of Benjamin Schlein

LIST OF PUBLICATIONS

PEER-REVIEWED ARTICLES

- [1] **G. B., C. Caraci, S. Cenatiempo**, “Energy expansions for dilute Bose gases from local condensation results: a review of known results”, To appear in: *Quantum Mechanics II*, M. Correggi, M. Falconi eds., Springer INdAM Series **58**, 2023.
- [2] **G. B., S. Cenatiempo, A. Olgiati, G. Pasqualetti, B. Schlein**, “A second order upper bound for the ground state energy of a hard-sphere gas in the Gross-Pitaevskii regime”, *Commun. Math. Phys.* **399** (2023), 1–55. doi.org/10.1007/s00220-022-04547-y.
- [3] **G. B., C. Cacciapuoti, D. Finco, A. Teta**, “Three-body Hamiltonian with regularized zero-range interactions in dimension three”, *Ann. Henri Poincaré* **24** (2023), 223–276. doi.org/10.1007/s00023-022-01214-9.
- [4] **G. B.**, “A second order upper bound on the ground state energy of a Bose gas beyond the Gross-Pitaevskii regime”, *J. Math. Phys.* **63**, 071902 (2022). doi.org/10.1063/5.0089790.
- [5] **G. B., S. Cenatiempo, A. Olgiati, G. Pasqualetti, B. Schlein**, “Ground state energy of a Bose gas in the Gross-Pitaevskii regime”, *J. Math. Phys.* **63**, 041101 (2022). doi.org/10.1063/5.0087116.
- [6] **G. B., S. Centiempo, B. Schlein**, “A new second order upper bound for the ground state energy of dilute Bose gases”, *Forum Math. Sigma* **9**, E74 (2021). doi.org/10.1017/fms.2021.66.
- [7] **G. B., R. Figari, A. Teta**, “Regularized quadratic forms for a three boson system with zero-range interactions”, *Rend. Mat. Appl. (7)* vol. 39 (2018), 205–216.
- [8] **G. B., S. Cenatiempo, A. Teta**, “Universal Low-Energy Behavior in a Quantum Lorentz Gas with Gross-Pitaevskii Potentials”, *Math. Phys. Anal. Geom.* **21**,11 (2018). doi.org/10.1007/s11040-018-9268-2
- [9] **G. B., C. Cacciapuoti, D. Finco, A. Teta**, “The three-body problem in dimension one: From short-range to contact interactions” *J. Math. Phys.* **59**, 072104 (2018). doi.org/10.1063/1.5030170
- [10] **G. B., A. Teta**, “Efimov Effect for a Three-Particle System with Two Identical Fermions”, *Ann. Henri Poincaré* **18**, 3975–4003 (2017). doi.org/10.1007/s00023-017-0608-8
- [11] **G. B., A. Teta**, “On the quantum mechanical three-body problem with zero-range interactions” In: *Functional Analysis and Operator Theory for Quantum Physics*, J. Dittrich, H. Kovarik, A. Laptev eds., EMS Ser. Congr. Rep., EMS Publishing House, 2017, 71–93. doi.org/10.4171/175

PREPRINTS

- [1] **G. B., S. Cenatiempo, A. Giuliani, A. Olgiati, G. Pasqualetti, B. Schlein**, “Upper bound for the ground state energy of a dilute Bose gas of hard spheres”, Preprint: arXiv:2212.04431v2.

OTHER

- [1] **G.B.**, “Upper bounds on the energy of dilute gases of hard-sphere bosons”, To appear on Oberwolfach Rep. of the Workshop: “Many-Body Quantum Systems” held on Sept. 10–15, 2023
- [2] **G. B.**, “Universal low-energy behavior in a quantum Lorentz gas with Gross-Pitaevskii potentials”, In: Oberwolfach Rep.**16** no.1 (2019), 628–630. doi.org/10.4171/OWR/2019/10.

TEACHING EXPERIENCE

2020 – Present **PhD courses held at GSSI**

- Probability and Statistical Mechanics. Part II: Quantum Statistical Mechanics
- An Invitation to Quantum Statistical Mechanics

2017 – 2020 **Teaching Assistant at the Institute for Mathematics, University of Zurich**

- Analysis III (2nd year class)
- Analysis II (1st year class)
- Analysis I (1st year class)
- Linear Algebra II (1st year class)

2015 – 2017 **Teaching Assistant at Sapienza, University of Rome**

- Mathematical Analysis (1st year, Faculty of Engineering)
- Remedial Course in Mathematics “OFA” (1st year, Faculty of Science)

SCIENTIFIC COMMUNICATIONS

INVITED SEMINARS

- 02/2023 **UBC Differential Geometry, Mathematical Physics and PDE**,(online)
The University of British Columbia (CA)
- 11/2021 **Seminar Mathematische Physik**, (online)
KIT - Karlsruher Institut für Technologie, Karlsruhe (DE)
- 06/2021 **Munich-Aarhus-Santiago Seminar in Mathematical Physics**, (online)
LMU Munich (DE), Aarhus University (DK), Pontificia Universidad Católica de Chile (CL)
- 02/2021 **Oberseminar “Analysis and Mathematical Physics”**, (online)
LMU Munich (DE)
- 01/2021 **SMAQ seminars**, (online)
L’Aquila (IT)
- 11/2017 **Mathematical Physics Seminar**,
Sapienza University of Rome (IT)
- 06/2017 **PDE and Mathematical Physics seminar**,
University of Zurich (CH)
- 05/2017 **Analysis Seminar**,
Politecnico di Torino (IT)

TALKS IN CONFERENCES (INVITED)

- 08/2024 **Rigorous Renormalization Group Analysis of Collective Phenomena**
upcoming **in Fermionic Quantum Systems,**
Lake Como School of Advanced Studies (IT)
- 09/2023 **Workshop: Many-Body Quantum Systems,**
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)
- 08/2023 **Nonlinear PDEs in quantum mechanics and applications,**
[Minisimposium of the SIMAI bi-annual congress]
Matera (IT)
- 07/2023 **Workshop of Young Researchers in Mathematical Physics,**
Westerham (DE)
- 02/2023 **Trails in Quantum Mechanics and surroundings,**
Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste (IT)
- 07/2022 **AMS-SMF-EMS Joint International Meeting,** (declined, due to health reasons)
[Special Session “Mathematical Challenges in Complex Quantum Systems”]
Université de Grenoble-Alpes, Grenoble (FR)
- 03/2019 **Mini-Workshop: Lorentz Gas Dynamics: particle systems and scaling limits,**
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)
- 07/2018 **Mathematical Challenges of Zero-Range Physics,**
Istituto Nazionale di Alta Matematica Francesco Saveri (INDAM), Roma (IT)
- 11/2016 **Mathematical Challenges of Zero-Range Physics,**
Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste (IT)
- 07/2015 **Trails in Quantum Mechanics and Surroundings (TQMS) 2015,**
Università degli Studi dell’Insubria, Como (IT)

TALKS IN CONFERENCES (CONTRIBUTED)

- 06/2022 **Mathematical Challenges in Quantum Mechanics (MCMQ2022),**
Como (IT)
- 08/2021 **International Conference in Mathematical Physics (ICMP),**
[Thematic Session “Many-body Quantum Systems and Condensed Matter Physics”]
International Conference Centre, Geneva (CH)
- 06/2021 **Emergent theories for wave turbulence and particle dynamics,**
SwissMAP Research Station, Les Diablerets (CH)
- 02/2021 **Mathematics of Condensed Matter and Beyond (MCMB),**
American University of Beirut (LB) (online)
- 02/2018 **Mathematical Challenges in Quantum Mechanics (MCQM2018),**
Sapienza, University of Rome (IT)
- 05/2017 **Assemblea Scientifica GNFM 2017,**
Montecatini Terme (IT)

POSTERS

- 04/2017 **Spectral Days 2017,**
University of Stuttgart (DE)
- 11/2016 **Mathematical Foundations of Physics,**
Mathematical Institute LMU, Munich (DE)

FUNDING INFORMATION

- 02/2021– **Member** “*Emergent Features in Quantum Bosonic Theories and Semiclassical Analysis*”,
07/2022 Progetto Giovani GNFM 2021
Funded by: INdAM–GNFM
Grant awarded:
4 participants, PI: Marco Falconi (Politecnico di Milano)
- 07/2018– **Member** “*Dinamica e scattering per sistemi a molti corpi*”,
07/2019 Progetto Giovani GNFM 2018
Funded by: INdAM–GNFM
Grant awarded:
3 participants, P.I.: Claudio Cacciapuoti (Università degli studi dell’Insubria)
- 12/2017– **Member** “*Dynamical and energetic properties of Bose-Einstein condensates*”,
11/2020 Funded by: Swiss National Science Foundation (SNF)
Grant awarded:
P.I.: Benjamin Schlein (University of Zurich)
- 08/2016– **P. I.** “*Effetto Efimov ed Effetto Thomas in Sistemi Quantistici a Molti Corpi*”,
08/2017 Progetto di Avvio alla Ricerca 2016
Funded by: Sapienza, University of Rome
Grant awarded:
1 participant
- 05/2016– **Member** “*Limiti di scala e sistemi quantistici a molte particelle con interazioni di contatto*”,
05/2017 Progetto Giovani GNFM 2016
Funded by: INdAM–GNFM
Grant awarded:
3 participants P.I.: Claudio Cacciapuoti (Università degli studi dell’Insubria)

RESEARCH VISITS

- 08/2021 *University of Zurich (CH)* (1 week),
by invitation of Benjamin Schlein
- 06/2019 *Università dell’Insubria, Como (IT)* (1 week),
by invitation of Claudio Cacciapuoti
- 04/2018 *Gran Sasso Science Institute, L’Aquila (IT)* (1 week),
by invitation of Serena Cenatiempo
- 06/2017 *University of Zurich (CH)* (1 week),
by invitation of Benjamin Schlein
- 03/2017 *Politecnico di Torino (IT)* (1 week),
by invitation of Riccardo Adami
- 01/2016 *Scuola Internazionale Superiore degli Studi Avanzati, Trieste (IT)* (1 week),
by invitation of Alessandro Michelangeli

EVENTS BY INVITATION

- 09/2023 **Many-Body Quantum Systems (ID 2337)** (1 week),
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)
- 09/2019 **Many-Body Quantum Systems (ID 1937)** (1 week),
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)
- 03/2019 **Many-body theory, effective equations & PDEs** (1 week),
Institut Mittag-Leffler, Djursholm (SE)
- 03/2019 **Lorentz Gas Dynamics: particle systems and scaling limits (ID 1910b)** (1 week),
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)

FELLOWSHIPS

- 2020 **Selected for a PostDoc fellowship** *GSSI, L'Aquila (IT)*
- 2014 **Selected for a PhD scholarship** *Sapienza, University of Rome (IT)*
- 2010 **Percorso d'eccellenza** *Department of Math., Sapienza, University of Rome (IT)*,
Additional courses and full compensation of the tuition fees for the academic year 2011/2012,
30 positions available.

ORGANIZATION OF SCHOOLS AND WORKSHOPS

- Scaling limits and generalized hydrodynamics**,
Gran Sasso Science Institute (GSSI), L'Aquila (IT), March 27–30, 2023
- Statistical and Quantum Mechanics: reconsidering their foundations in the light of new cutting edge experiments and theoretical models**,
Gran Sasso Science Institute (GSSI), L'Aquila (IT), September 20–23, 2021
- From Equilibrium Phenomena Towards Open Quantum Systems**, (online)
Gran Sasso Science Institute (GSSI), L'Aquila (IT), March 22–26, 2021

SERVICES TO THE SCIENTIFIC COMMUNITY

Reviewer for *Annales Henri Poincaré • Forum of Mathematics, Sigma • Journal of Functional Analysis • Letters in Mathematical Physics • Mathematical Physics, Analysis and Geometry • Springer Proceeding Series*

SOCIETY MEMBERSHIPS

2017 – Present | *International Association of Mathematical Physics (IAMP)*
2016 – Present | *Gruppo Nazionale Fisica Matematica, Istituto Nazionale di Alta Matematica (GNFM)*

OUTREACH ACTIVITIES

Ladyzenskaya’s Heritage in Math and Beyond,

Organization of the joint event between GSSI and University of L’Aquila addressed to Master and PhD students to celebrate Olga Ladyzenskaya’s 100th birthday,
Gran Sasso Science Institute, L’Aquila (IT), June 15, 2023

Indovina chi viene stasera? Aperitivo con le Matematiche,

Organization of the joint online event between GSSI and University of L’Aquila addressed to high school students on the occasion of the initiative “May12 – Celebrating Women in Mathematics”, June 3, 2021

Voices of women in mathematical physics,

Participation in the realization of 5 interviews to female researchers appeared in the International Association of Mathematical Physics (IAMP) News Bulletin, April 2022