Davide Morgante

Personal Information

Date of birth	February 22nd, 1996
Place of birth	Rome, Italy
Citizenship	Italian

Education

2021-2024	**Ph.D**, *University of Milan*, Milan, Italy
Supervisor	Dr. Antonio Amariti
Short description	My Ph.D focuses on formal aspects of (Supersymmetric-)Quantum Field Theories, Holography and String/M-theory. Recently I've been interested in generalized and non-invertible symmetries, as well as more mathematical aspects of topological QFTs.

2019-2021	**M.Sc**, *Sapienza University of Rome*, Rome, Italy
Title	Unitarity triangle analysis and recent theoretical advancements on ϵ'/ϵ
Advisor	Prof. Guido Martinelli
Co-advisor	Prof. Marco Nardecchia
Grade	110/110 cum laude
Short description	In my master thesis I worked on the UT analysis of the ϵ'/ϵ parameter in the $K \to 2\pi$ decay starting from the recent result from R.Abbott et al. (arXiv:2004.09440v2). The work of my thesis resulted in the publication of a related paper in the "*Rendiconti Lincei*" journal.

2016-2019	**B.Sc**, *Sapienza University of Rome*, Rome, Italy
Title	Semiclassical transition amplitudes. (original: Ampiezze semiclassiche di transizione.)
Advisior	Prof. Guido Martinelli
Grade	110/110 cum laude
Short description	In my bachelor thesis I analyzed the transition probability of a metastable state for a generic scalar field theory, in the semiclassical limit. In the thesis I also gave the theoretical basis upon which the transition probability was calculated, namely: Feynman path integral formulation, quantum tunneling and classical field theory arising from the collective excitation of a system with many degrees of freedom.

Teaching experience

Feb-Sept 2022, 2023 and 2024	**Teaching Assistent**, *Mathematical methods for Physics*, University of Milan, Milan. I've had the opportunity to engage in tutoring roles, where I've not only imparted knowledge but also learned valuable lessons in communication, adaptability, and mentorship. I honed my ability to convey complex concepts clearly and tailor my approach to meet diverse student needs. The main topics of the course were: complex analysis, functional analysis, operator theory and the theory of distributions.
Sept 2022 and 2023	**Lecturer**, *Introductory math*, University of Milan, Milan. Lecturer: Davide Morgante

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Visiting

1 May - 15 June 2023 **Visiting PhD**, *SISSA*, Trieste.
I was a visiting PhD student at the International School for Advanced Studies were I had to opportunity to follow the PhD courses provided by SISSA as well as discussing relevant topics with professors and students.

Conferences and Workshops

Dec 2023 **XIX Avogadro meeting on Strings, Supergravity and Gauge Theories**, *Padua*, Italy
Sept 2023 **New Frontiers in Theoretical Physics**, *Cortona*, Italy
Jul 2023 **Strings 2023**, *Waterloo*, Canada
Apr 2023 **Eurostrings 2023**, *Gijon*, Spain
Jan 2023 **Iberian Strings 2023**, *Murcia*, Spain
Dec 2022 **XVIII Avogadro meeting on Strings, Supergravity and Gauge Theories**, *Turin*, Italy
Jun 2022 **Theory of Fundamental Interactions INFN conference**, *Venice*, Italy
March 2022 **Iberian Strings 2022**, *Gijòn*, Spain

Schools

22-26 Apr 2024 **ICTP Spring School on Superstring Theory and Related Topics**, *Trieste*, Italy.
Lectures:
- *New AdS/CFT Entropy formulae at large charge and angular momentum* (Shiraz Minwalla)
- *BFFS and BMN matrix models* (Shota Komatsu)
- *The S-matrix bootstrap* (Alexander Zhiboedov)
- *A celestial holography primer* (Andrea Puhm)

3-9 Sept 2023 **Categorical Symmetries in Quantum Field Theory**, *Les Diablerets*, Switzerland.
Lectures:
- *Applied cobordism hypotesis* (David Jordan)
- *Non-invertible symmetries* (Shu-Heng Shao)
- *The mathematics of TQFTs and defects* (Constantin Teleman)
- *Symmetry categories 101* (Michele Del Zotto)

16 Nov-26 Dec 2022 **LACES 2022**, *Florence*, Italy.
Lectures
- *CFT approaches to amplitudes* (Agnese Bissi)
- *Methods and techniques in non-perturbative QFT* (Lorenzo Di Pietro)
- *Holography and quantum gravity* (Roberto Emparan)
- *Two-dimensional CFT* (Matthias Gaberdiel)
- *Aspects of 4d supersymmetric dynamics and geometry* (Shlomo Razamat)

21-27 Aug 2022 **CERN Winter School on Supergravity, Strings and Gauge Theory 2022**, *Geneva*, Switzerland.
Lectures:
- *Topics in the bootrstap* (Dalimil Mazac)
- *An introduction to the basics of flux vacua and related swampland conjectures* (Thomas Van Riet)
- *Spectral theory from gauge and string theory* (Alba Grassi)
- *Emergence of space and time in holography* (Hong Liu)
- *Line defects: symmetries, RG flows, and screening* (Zohar Komargodski)
- *Artificial intelligence for theoretical physics and mathematics* (Fabian Ruehle)

9-13 May 2022 **ICTP Spring School on Superstring Theory and Related Topics**, *Trieste*, Italy.
Lectures:
- *Non-invertible symmetries* (Yifan Wang)
- *Celestial amplitudes* (Laura Donnay)
- *Topological aspects of string theory* (Kevin Costello)
- *Strings in AdS_3* (Matthias Gaberdiel)

Seminars and Poster Presentations

13 June 2024 Poster presentation at **String Math 2024**, *"Cardy Matches Bethe on the Surface: a Tale of a Brane and a Black Hole"*, Trieste, Italy

03 June 2024 Poster presentation at **Strings 2024**, *"BBBW On the Spindle"*, Trieste, Italy

21 May 2024 Poster presentation at **Strings and Geometry 2024**, *"Cardy Matches Bethe on the Surface: a Tale of a Brane and a Black Hole"*, Trieste, Italy

22 Apr 2024 Poster presentation at **Spring School on Superstring Theory and Related Topics**, *"BBBW On the Spindle"*, Trieste, Italy

2 Nov 2023 Invited talk at **Technion**, *"Spindly M5s"*, Haifa, Israel.

27 Sept 2023 Talk at the **New Frontiers in Theoretical Physics conference**, *"Sporadic dualities from tensor deconfinement"*, Cortona, Italy.

27 Sept 2022 Talk at **Università degli Studi di Milano**, *"Supersymmetric dualities in three-dimensions"*, Milan, Italy.

List of publications

- **Les Diablerets Summer School: Symmetry Categories 101**, *in Simons Lectures on Categorical Symmetries*, To Appear.
M. Del Zotto, D. Morgante

2024 **Cardy matches Bethe on the Surface: a Tale of a Brane and a Black Hole**, *ArXiv:2403.17190*, Preprint.
A. Amariti, P. Glorioso, D. Morgante, A. Zanetti

2023 **BBBW on the Spindle**, *ArXiv:2309.11362*, [Submitted to Sci-Post].
A. Amariti, S. Mancani, D. Morgante, N. Petri, A. Segati

2023 **Sporadic dualities from tensor deconfinement**, *ArXiv:2307.14146*, [Submitted to JHEP].
A. Amariti, F. Mantegazza, D. Morgante

2023 **One-form symmetries in $\mathcal{N} = 3$ S-folds**, *Sci-Post*, [10.21468/SciPostPhys.15.4.132].
A. Amariti, D. Morgante, A. Pasternak, S. Rota, V. Tatitscheff

2022 **Chiral dualities for $SQCD_3$ with D-type superpotential**, *JHEP*, [10.1007/JHEP02(2023)032].
A. Amariti, D. Morgante

2022 **New UTfit Analysis of the Unitarity Triangle in the Cabibbo-Kobayashi-Maskawa scheme**, *Rend.Lincei Sci.Fis.Nat*, [10.1007/s12210-023-01137-5].
UT-fit collaboration

Highlights

2020 **Honours Program**, *Sapienza University*, Rome.
The Honours Programme is an advanced course providing additional training to the normal study programme. For this program, I followed an additional course at Tor Vergata University held by prof. Raffaele Savelli on group theory, representation theory of finite and Lie groups.

2020 **Student Collaboration Scholarship**, *Sapienza University*, Rome, SoRT.
I won one of the 39 collaboration scholarships at the Physics department of Sapienza. All informations can be gathered from the official page https://www.uniroma1.it/en/pagina/student-collaboration-scholarships

Languages

Italian	Mother tongue
English	Overall C2 level
French	Overall A2 level

Computer skills

Programming languages	C, C++, Python, Mathematica, HTML, CSS
Data analysis	R, Gnuplot
Writing	Office package, LaTeX
Misc	Basic knowledge of machine learning
Libraries:	ROOT, Geant4, Scikit-learn, Tensorflow

Pesonal Interests

Music.

I've been teaching myself piano for as long as I can remember. It's not just about hitting the right notes, it's taught me the importance of sticking with something, even when it gets tough. Whether I'm tackling a tricky piece or a complex problem in my studies, I've learned the value of perseverance and focus.

DIY.

I'm passionate about hands-on projects, whether it's crafting wooden furniture or delving into DIY electronics. From designing and building intricate circuits to shaping wood into functional pieces, I enjoy the process of creating something tangible. These hobbies not only allow me to express my creativity but also teach me valuable lessons in problem-solving, precision, and perseverance.

References

Names

- Antonio Amariti
- Luca Guido Arthur Molinari
- Guido Martinelli

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