# Davide Morgante

## Education

2021- **PhD**, *University of Milan*, Milan.
PhD Student under the supervision of prof. Antonio Amariti. My research interests are the theoretical aspects of Quantum Field Theories through supersymmetry techniques, geometric engineering in string/M-theory, categorical symmetries and higher-group structures.

2019-2021 **M.Sc**, *Sapienza University of Rome*, Rome, *110 with Honors*.
Master degree in theoretical high energy physics

2016-2019 **B.Sc**, *Sapienza University of Rome*, Rome, *110 with Honors*.
Bachelor degree in physics.

## Bachelor Thesis

Title *Semiclassical transition amplitudes. (original: Ampiezze semiclassiche di transizione.)*

Advisior Prof. Guido Martinelli

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.

## Master Thesis

Title Unitarity triangle analysis and recent theoretical advancements on $\epsilon'/\epsilon$

Advisor Prof. Guido Martinelli

Co-advisor Prof. Marco Nardecchia

Short description In my master thesis I worked on the UT analysis of the $\epsilon'/\epsilon$ 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.

## Experience

2022 **Teaching Assistent**, *University of Milan*, Milan.
I was a TA for the course of Mathematical Methods for Physics held in Unimi. My duties included extra tutoring classes, office hours and lectures.

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2022 **Teaching**, *University of Milan*, Milan.
I held the course of introductory math for the freshman of the physics bachelor at the University of Milan.

2023 **Teaching Assistent**, *University of Milan*, Milan.
I was a TA for the course of Mathematical Methods for Physics held in Unimi. My duties included extra tutoring classes, office hours and lectures.

1 May - 15 June 2023 **Visiting PhD**, *SISSA*, Trieste.
I was a visiting PhD student at the International School for Advanced Studies.

2023 **Teaching**, *University of Milan*, Milan.
I held the course of introductory math for the freshman of the physics bachelor at the University of Milan.

## Schools and Conferences

3-9 Sept 2023 **Categorical Aspects of Symmetry**, *Les Diablerets*.
Participating at the school "Categorical Aspects of Symmetries"

24-29 Jul 2023 **Strings 2023**, *Waterloo*.
Participating at the conference "Strings 2023" at Perimeter Institute

24-28 Apr 2023 **Eurostrings 2023**, *Gijon*.
Participating at the conference "Eusotrings 2023"

11-13 Jan 2023 **Iberian Strings 2023**, *Murcia*.
Participating at the conference school "Iberian Strings 2023"

20-22 Dec 2022 **XVIII Avogadro meeting on Strings, Supergravity and Gauge Theories**, *Turin*.
Partecipating at the 18th installment of the Avogadro meetings.

16 Nov-26 Dec 2022 **LACES 2022**, *Florence*.
Partecipating at the Advanced Lectures on Fields and Strings doctoral school.

21-27 Aug 2022 **CERN Winter School on Supergravity, Strings and Gauge Theory 2022**, *Geneva*.
Partecipating at the CERN school on Supergravity, Strings and Gauge theories. The main topic covered have been: conformal bootstrap, higher symmetries and defects, spectral theory for gauge and string theory, flux compactifications, holography.

12-15 Jun 2022 **Theory of Fundamental Interactions INFN conference**, *Venice*.
Partecipating at the INFN conference Theory of Fundamental Interactions.

9-13 May 2022 **ICTP Spring School on Superstring Theory and Related Topics**, *Trieste*.
Participating at the ICTP Spring School on Superstring Theory and Related Topics. The main topics covered have been: celestial holography, non-invertible symmetries, topological aspects of string theory and strings in $AdS_3$.

23-25 March 2022 **Iberian Strings 2022**, *Gijòn*.
Participating at the conference school "Iberian Strings 2022"

## Seminars

4 Sept 2023 **Les Diablerets**.
Seminar on "Sporadic dualities from tensor deconfinement" paper

27 Sept 2023 **Cortona**.
Seminar on "Sporadic dualities from tensor deconfinement" paper

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## 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

## Computer skills

Programming languages: C, C++, Python

Libraries: ROOT, Geant4, Scikit-learn, Tensorflow

Data analysis: R, Gnuplot

Writing: Office package, LaTeX

Misc: Basic knowledge of machine learning

## List of publications

**Chiral dualities for SQCD$_3$ with D-type superpotential**, *doi:10.1007/JHEP02(2023)032*

**New UTfit Analysis of the Unitarity Triangle in the Cabibbo-Kobayashi-Maskawa scheme**, *doi:10.1007/s12210-023-01137-5*

**One-form symmetries in $\mathcal{N} = 3$ S-folds**, *e-print:2303.07299*

**Sporadic dualities from tensor deconfinement** , *e-print:2307.14146*

**BBB3 on the Spindle**, *To appear*

## Signature

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