Antonio Del Donno

Personal Data

| Born: | Born on January 29th 1994, in Benevento (BN), Italy. |
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| Address: | Via Luigi Vestri 9, Bologna (BO), Italy. |
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Present occupations and goals

Mathematician Having initially pursued theoretical physics, specializing in quantum field theory and beyond the standard model physics, I found myself increasingly drawn to the mathematical foundations of these theories. This led me to delve into the realms of differential geometry and topology, recognizing their pivotal roles in understanding quantum mechanics, field theories, and general relativity. Motivated by this growing fascination, I enrolled in a master's degree program in mathematics, where I advanced my knowledge in geometry, topology, and algebra. For my second master's thesis, I explored differential calculi on quantum principal bundles, synthesizing my dual passions for mathematics and physics. Currently, I am expanding the research carried out in my thesis, with the Aim of further explore topics such as **noncommutative geometry**. Hopf algebras, guantum principal bundles and other related subjects, together with possible applications to mathematical physics. Beside my academic commitments I also serve as a tutor at the University of Bologna, providing assistance in mathematics and physics across various departments. Additionally, I offer private tutoring services in physics, mathematics, and chemistry to both university and high school students.

With regard to this part of my skills, my goal is to proceed along the path that I am already tracing, and thus become the best **researcher** in mathematics that I can be.

Musician As a trained musician, I have developed my crafts across various roles, serving as a session musician, producer, and mixing and mastering engineer. My expertise has been cultivated through a combination of self-study and mentorship. With a primary focus on the **electric guitar**, I possess great proficiency in this instrument, complemented by solid skills in electric bass guitar and keyboards/piano/synthesizers. My portfolio encompasses diverse music styles, showcasing my versatility in producing, mixing, and mastering records. Right now I am a freelance music producer, mixing/mastering engineer and session musician. From January 2020 to July 2023 I worked full-time with Garrincha Edizioni Musicali, genre leading record label with which I still often collaborate today. I also work as composer, guitarist, bass and keyboard player with different projects. I count approximately two hundreds live shows and I have five active personal records. With regard to this complementary part of my curriculum, my goal is to pursue this profession on an occasional basis, maintaining artistic freedom

and dealing with an extremely selected number of productions.

Education

| Nov 2020 | Master's degree in mathematics at University of Bologna. Thesis: Differential calculi on quantum principal bundles in the Durdevic approach, discussed on March 2024. Supervised by: Professors E. Latini and T. Weber. |
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| Oct 2016 | Master's degree in theoretical physics at University of Bologna. Thesis: Testing electroweak baryogenesis at the LHC in a minimal extension of the standard model, discussed on December 2018. Supervised by: Professors F. Maltoni and A. Mariotti, in collaboration with the Universit Catholique de Louvain (Louvain la Neuve) and the Vrije Universiteit Brussel. |
| Oct 2012 | Bachelor's degree in physics at University of Salerno. Thesis : <i>An introduction to string theory</i> , discussed on May 2016. Supervised by : Professors G. Lambiase and M. Blasone. |

Publications and preprints

- 1. Del Donno, A., Latini, E., Weber, T.: *On the Durdevic approach to quantum principal bundles.* Preprint ArXiv:2404.07944.
- 2. Del Donno, A.: *Differential calculi on quantum principal bundles in the Durdevic approach*. Preprint. Available arXiv:2406.16882 .
- 3. Del Donno, A.: *Testing electroweak baryogenesis at the LHC in a minimal extension of the standard model.* Available here.

Awards and prizes

2024, Prague 4-years PhD fellowship in mathematics at the Charles University of Prague.

Conferences and workshops organised

2024, Bologna A quantum day in Bologna 2024.

Teaching experiences

2024-Now
 Istituzioni di matematica P. (Elements of mathematics), at Department of Engineering, University of Bologna.
 2023-2024
 Fisica 1 (Physics 1), at Department of Chemistry, University of Bologna.
 Fisica ed elementi di matematica (Physics and elements of math), at Department of Biotechnology and Pharmacy (FABIT), University of Bologna.

Abroad experiences

| 2022, Geneva | Feebly interacting particles Workshop 2022, at CERN. |
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| 2018, Brussel | Visiting student (development of master's degree thesis) at Vrije Univer- |
| | siteit Brussel. |

2018, Louvain Visiting student (development of master's degree thesis) at Universit Catholique de Louvain (Louvain la Neuve).

Conferences, schools and workshops attended

| 2024, | Bologna | Noncommutativity at the Interface of Topology, Geometry and Analysis. |
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| 2024, | Bologna | Manifolds and groups in Bologna, II. |
| 2024, | Napoli | Miniworkshop on Manifolds, (C*-)Algebras and Quantization. |
| 2023, | Bologna | Weekly Seminars: Cartan geometry, nc geometry and quantum groups. |
| 2023, | Bologna | Quiver representation, Quiver varieties and combinatorics at UniBO. |
| 2022, | Bologna | International Conference on High Energy Physics 2022 (staff member). |
| 2022, | Bologna | Three day summer school on the geometry and dynamics of moduli spaces. |
| 2021, | Trieste | Junior Math Days at SISSA. |
| 2021, | Online | LQG summer school at CPT Marseille. |
| 2020, | Online | Strings webinars organised by INFN. |
| 2020, | Bologna | Winter School on Integrable Systems and Representation Theory. |
| 2018, | Ghent | Be.HEP summer solstice 2018. |
| 2018, | Bologna | LHCP 2018. |
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Languages

| English | Advanced on listening, reading and writing; very good in speaking. |
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| Italian | Native. |
| French | Next-to-basic listening and reading. |
| Spanish | Basic listening and reading. |

Other skills

| Programming | Mathematica, matlab and python. Rudiments of HTML and CSS. |
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| Writing | Experience in academic scientific writing using LATEX. |
| Audio Systems | Expert with Ableton Live, Logic Pro, Pro Tools. Knowledge of almost every |
| | popular music production software. |