# Antonio Del Donno

## Personal data


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| `Born:` | January 29th 1994, in Benevento (BN), Italy. |
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## Profile

I initially pursued theoretical physics, specializing in quantum field theory and beyond the standard model physics. I found an increasing fascination for the mathematical foundations of these theories and for mathematical methods in physics in general. This led me to delve into the realms of geometry and topology. Motivated by this growing passion, I enrolled in a master's degree program in mathematics, where I started to comprehend I would rather try to become a researcher in mathematics. My second master's thesis is about noncommutative geometry and Hopf algebras, in particular I explored the topic of differential calculi on quantum principal bundles. I am now enrolled in a PhD programme at the Charles University of Prague, with focus on the noncommutative geometry of quantum flag manifolds. Beside my main academic commitments I also serve as a tutor for the University of Bologna, specifically for the engineering and chemistry departments.

## Research topics

Noncommutative differential geometry. Hopf algebras and their representation theory.

## Education

**PhD candidate** — 1st year PhD student in Mathematics at the Charles University of Prague. In my current research I use a mixture of techniques coming from Hopf algebras, quantum groups, representation theory and differential geometry.
`Thesis topic:` On the noncommutative geometry of quantum flag manifolds.
`Supervised by:` Professors Réamonn Ó Buachalla and Thomas Weber.

**Master's degree** — Master's degree in Mathematics at the University of Bologna, pure mathematics curricula.
`Thesis:` *Differential calculi on quantum principal bundles in the Durdević approach*, discussed in March 2024.
`Supervised by:` Professors Emanuele Latini and Thomas Weber.

**Master's degree** — Master's degree in Physics at the University of Bologna. Theoretical physics curricula.
`Thesis:` *Testing electroweak baryogenesis at the LHC in a minimal extension of the standard model*, discussed in December 2018.
`Supervised by:` Professors Fabio Maltoni and Alberto Mariotti, in collaboration with the Université Catholique de Louvain (Louvain-la-Neuve) and the Vrije Universiteit Brussel.

**Bachelor's degree** — Bachelor's degree in Physics at the University of Salerno.
`Thesis:` *An introduction to string theory*, discussed in May 2016.
`Supervised by:` Professors Gaetano Lambiase and Massimo Blasone.

## Publications and preprints

1. `Authors:` Del Donno, A., Latini, E., Weber, T.
   `Title:` "*Gauge transformations on quantum principal bundles*".
   `Status:` ArXiv preprint. ArXiv:2505.10193.

2. `Authors:` Del Donno, A., Latini, E., Weber, T.
   `Title:` "*On the Durdevic approach to quantum principal bundles.*"
   `Status:` Published. Journal of Geometry and Physics, Volume 216, October 2025, 105567.

3. `Author:` Del Donno, A.
   `Title:` "*Differential calculi on quantum principal bundles in the Durdevic approach*".
   `Status:` Arxiv preprint (master's thesis): arXiv:2406.16882 .

4. `Author:` Del Donno, A.
   `Title:` "*Testing electroweak baryogenesis at the LHC in a minimal extension of the standard model*".
   `Status:` Preprint (master's thesis). Available here.

## Conferences and workshops organised

1. `Title:` *A quantum day in Bologna*.
   `Date:` `April 2024`.
   `Institution:` University of Bologna, Italy.

## Invitation as speaker and contributions to conferences

**Talks:**

1. `Title:` "*On differential calculi and quantum principal bundles.*"
   `Date:` October 2024.
   `Institution:` *NCG&T seminars*, Charles university in Prague, Czech republic.

2. `Title:`"*Principal bundles and differential structures in noncommutative geometry*".
   `Date:` January 2025.
   `Institution:` *45th winter school on geometry and physics* in Srni, Czech republic.

3. `Title:` "*Differential structures and principal bundles in noncommutative geometry*".
   `Date:` February 2025.
   `Institution:` *CaLiForNIA kickoff meeting* at the Masaryk University in Brno, Czech republic.

4. `Title:` "*Principal bundles and differential structures in noncommutative geometry*".
   `Date:` July 2025.
   `Institution:` *A quantum of noncommutativity*, a conference in honour of Shahn Majid's 65th birthday, in Ambleside, United Kingdom.

5. `Title:` "*Principal bundles and differential structures in noncommutative geometry*".
   `Date:` September 2025.
   `Institution:` *Differential geometry and its applications* at the Masaryk University in Brno, Czech republic.

**Posters:**

1. `Title:` "*On the Durdevic approach to quantum principal bundles*",
   `Date:` April 2025.
   `Institution:` *Hopf–25*, conference on Hopf algebras, monoidal categories and related structures, in Brussels, Belgium.

## Teaching experiences

**Istituzioni di Matematica P.** — Since January 2024 I am the teaching assistant for the "*Istituzioni di Matematica P.*" (Elements of Mathematics) course at the Department of Engineering, University of Bologna, taught by Prof. Luca Battistella. Responsibilities included tutoring sessions and leading exercise classes in linear algebra and geometry, both during the course and in preparation for the written examinations.

**Fisica 1** — From September 2023 to February 2025 I was the teaching assistant for "*Fisica 1*" (Physics 1) course at Department of Chemistry, University of Bologna, taught by Prof. Tiziano Rovelli. Responsibilities included tutoring sessions and leading exercise classes in mechanics and thermodynamics, both during the course and in preparation for the written examinations. Moreover, I provided support during the oral exams as a member of the examination committee.

**Fisica ed elementi di matematica** — From September 2021 to August 2023 I was the teaching assistant for the "*Fisica ed elementi di matematica*" (Physics and elements of math) course at the Department of Biotechnology and Pharmacy (FABIT), University of Bologna, taught by Prof. Tiziano Rovelli. Responsibilities included tutoring sessions and support during the oral exams as a member of the examination committee.

## Theses supervised

1. `Author:` Giovanni Gava.
   `Title:` "*On quantum G-structures*", master's thesis in theoretical physics at the University of Bologna, Italy.
   `Role:` Co–supervisor, with Emanuele Latini.

## Internships, abroad experiences

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| `Bologna 25'` | Visiting researcher at "VST Srl" for a project on graph neural network algorithms and the geometry of the latent space of autoencoders. |
| `Brussels 18'` | Visiting student during summer 2018 (development of master's degree thesis) at Vrije Universiteit Brussel. |
| `Louvain 18'` | Visiting student during summer 2018 (development of master's degree thesis) at Université Catholique de Louvain (Louvain la Neuve). |

## Conferences, schools and workshops attended

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| `Ambleside 25'` | A quantum of noncommutativity: conference in honour of Shahn Majid's 65th birthday. |
| `Edinburgh 25'` | NseaG: noncommutative geometry along the north sea. |
| `Brussels 25'` | Hopf–25 conference on Hopf algebras, monoidal categories and related structures. |
| `Brno 25'` | CaLiForNIA kick-off meeting 2025. |
| `Srní 25'` | Winter school on Geometry and Physics. |
| `Bologna 24'` | Noncommutativity at the Interface of Topology, Geometry and Analysis. |
| `Bologna 24'` | Manifolds and groups in Bologna, II. |
| `Napoli 24'` | Miniworkshop on Manifolds, (C*-)Algebras and Quantization. |
| `Bologna 23'` | Weekly Seminars: Cartan geometry, nc geometry and quantum groups. |
| `Bologna 23'` | Quiver representation, Quiver varieties and combinatorics at UniBO. |
| `Bologna 22'` | International Conference on High Energy Physics 2022. |

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| Geneva 22' | Feebly interacting particles Workshop 2022, at CERN. |
| Bologna 22' | Three day summer school on the geometry and dynamics of moduli spaces. |
| Trieste 21' | Junior Math Days at SISSA. |
| Online 20' | Strings webinars organised by INFN. |
| Bologna 20' | Winter School on Integrable Systems and Representation Theory. |
| Ghent 18' | Be.HEP summer solstice 2018. |
| Bologna 18' | LHCP 2018. |

## Other work experiences

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| 2024 - Today | Freelance music producer, mixing/mastering engineer and session musician. Today I pursue this profession on an more occasional basis, maintaining artistic freedom and dealing with an extremely selected number of productions. |
| 2020 - 2023 | From January 2020 to July 2023 I worked (full-time) as a music producer, mixing/mastering engineer and session musician with *Garrincha Edizioni Musicali*, record label based in Bologna. I continued working with the same label as a freelancer until fall 2023. |
| Summer 20' | Grape harvester (Coupeur et Porteur) at *Clos du Moulin Aux Moines*. |

## Languages

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| English | Advanced. |
| Italian | Native. |
| French | Rudiments. |
| Czech | Rudiments. |

## Other skills

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| Programming | Mathematica, matlab and python. Rudiments of HTML and CSS. |
| 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. |

## Hobbies

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| Reading | Non-fictional books/essays on philosophy, mathematics, physics, plants, fungi. |
| Photography | I enjoy photography. You can find some of my photos at https://500px.com/p/antonio_del_donno?view=photos. |
| Hiking | I spend a good amount of my free time hiking and being in nature in general. |