

Curriculum Vitae

Personal Data

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|--------------------------|---|
| Name: | Giuseppe Bozzi |
| Place and Date of Birth: | Chieti (IT), February 22nd, 1977 |
| Citizenship: | Italian |
| E-mail: | <u>giuseppe.bozzi@unica.it</u> |

Qualifications

- **07/2018 - 07/2029:** Qualified for a position of **Associate Professor in Theoretical Physics** (Professore Associato - 02/A2 - Fisica Teorica delle Interazioni Fondamentali) in Italian Universities
- **02/2020 - 12/2024:** Qualified for a position of **Professor in Theoretical Physics** (Professeur des Universités - Section 29 - Constituants Élémentaires) in French Universities
- **25/06/2004 PhD** in Physics (University of Florence)
- **24/10/2000 Master Degree** in Physics (University of Pisa)

Scientific Path

- **from 01/10/2024:** **Associate professor** - University of Cagliari (IT)
- **01/10/2021 - 30/09/2024:** **Researcher (RTDb)** - University of Cagliari (IT)
- **01/07/2016 - 31/12/2020:** **Researcher (RTDa)** - University of Pavia (IT)
- **22/09/2014 - 30/06/2016:** **Contract Professor** - University of Milano (IT)
- **04/03/2013 - 29/01/2016:** **Teaching Fellow** - Politecnico Milano (Italy)
- **01/01/2009 - 31/12/2012:** **Post-doctoral research associate** - University of Milano (IT)
- **01/10/2006 - 31/12/2008:** **Post-doctoral research associate** - ITP, Karlsruhe (DE)
- **01/09/2004 - 31/08/2006:** **Post-doctoral research associate** - University of Grenoble (FR)
- **04/2001 - 03/2004:** **Ph.D. student in Physics** - University of Florence (IT).
Thesis discussed on June 25th, 2004.
PhD Thesis: "Higgs boson production at hadron colliders and its transverse-momentum distribution"
Supervisor: Dr. Stefano Catani
- **10/1995 - 10/2000:** **Undergraduate student in Physics** - University of Pisa (IT).
Laurea in Physics obtained on October 24th, 2000 *with highest grade and cum laude*
Master Thesis: "Fermioni chirali su reticolo" (*in italian*)
Advisor: Prof. Adriano Di Giacomo

Research

• Research Interests

- Perturbative QCD: radiative corrections and all-order (resummed) predictions for electroweak observables (Higgs, Drell-Yan and multi-boson final states) at hadron colliders; phenomenology of SM and BSM processes at hadron colliders.
- Non-perturbative QCD: impact of proton internal structure on precision electroweak observables at hadron colliders; fit of transverse momentum dependent (TMD) PDFs from Drell-Yan and Semi-Inclusive DIS data; TMD factorisation.
- *Aim*: promote the synergy and exploit the complementarity between LHC and EIC, both bringing my high-energy expertise in the hadronic community and promoting the physics case for TMD studies at CERN, in order to provide a better description of the nucleon structure and an increasingly precise understanding of the strong interactions.

• Research Products

- Scientific database identifiers:
ORCID [0000-0002-2908-6077](https://orcid.org/0000-0002-2908-6077), Publons [H-7283-2017](https://publons.com/author/7283-2017/), Scopus [6701441101](https://scopus.com/authid/detail.url?authorid=6701441101), INSPIRE [G.Bozzi.1](https://inspirehep.net/literature/1500000)

• Software for high-energy physics

I contributed to the development and maintaining of the following numerical codes, widely used by experimental collaborations at Tevatron and LHC:

- **HqT**: Higgs boson differential distribution in transverse-momentum up to NNLL+NLO QCD
- **DYqT**: W and Z boson differential distribution in transverse-momentum up to NNLL+NLO QCD
- **VBFNLO**: fully-exclusive differential distribution for vector boson fusion and multi-boson production at NLO QCD
- **DYTurbo**: fully-exclusive differential distribution for Drell-Yan processes up to N3LL+NNLO QCD
- **NangaParbat**: fitting framework for the determination of the NP component of TMD PDFs

• Ongoing collaborations

- Member of the LHC Electroweak Working Group (high precision electroweak measurements, benchmarking of different formalisms for low transverse-momentum processes)
- Member of the Electron Ion Collider User Group (identification of measurements for existing or new physics topics at the EIC, and their impact on detector design)
- Member of the MAP (Multidimensional Analysis of Partonic Distributions) Collaboration (Amsterdam, Cagliari, Edinburgh, Pavia, Paris)
- Active collaboration with U. Pavia, U. Cagliari, U. Alcalà, Penn State U., JLab, CEA Saclay (global TMD fit, TMD factorisation at subleading twist, interplay between LHC and EIC)
- Active collaboration with U. Tübingen, U. Sapienza, ATLAS collaboration members (Drell-Yan at low invariant mass)
- Active collaboration with U. Milano, PSI, ATLAS collaboration members (reduction of theoretical systematics for W mass measurements)

Teaching

- **2024-2025 : University of Cagliari (126 h)**
 - “Classical Electromagnetism” (30 h)
 - “Mathematical Methods for Physics” (96 h)
- **2023-2024 : University of Cagliari (70 h)**
 - “Classical Electromagnetism” (70 h)
 - “Phenomenology of TMDs” for the CFNS PhD School, Stony Brook University (USA) (2 h)
- **2022-2023 : University of Cagliari (70 h)**
 - “Classical Electromagnetism” (70 h)
- **2021-2022 : University of Cagliari (70 h)**
 - “Classical Electromagnetism” (70 h)
 - Lectures on “Problem Solving in physics with Python” for the PhD course (UniPV) “Python-based Methods and Applications in Physics” (4 h)
- **2020-2021 : University of Pavia (34 h)**
 - Problem sessions for “Analytical Mechanics” (20 h) and “Quantum Electrodynamics” (10 h)
 - Lectures on “Problem Solving in physics with Python” for the PhD course “Python-based Methods and Applications in Physics” (4 h)
- **2019-2020 : University of Pavia (30 h)**
 - Problem sessions for “Analytical Mechanics” (20 h) and “Quantum Electrodynamics” (10 h)
- **2018-2019 : University of Pavia (42 h)**
 - Problem sessions for “Analytical Mechanics” (22 h) and “Quantum Electrodynamics” (10 h)
 - “Introduction to resummation methods” for the PhD course “Strong Interactions” (10 h)
- **2017-2018 : University of Pavia (36 h)**
 - Problem sessions for “Analytical Mechanics” (26 h) and “Quantum Electrodynamics” (10 h)
- **2016-2017 : University of Pavia (22 h)**
 - Problem sessions for “Analytical Mechanics” (22 h)
- **2015-2016 : University of Milano (60h)**
 - Full course (Lectures and Problem sessions) of “Quantitative methods for social sciences” (60h)
- **2015-2016 : Politecnico Milano (40 h)**
 - Problem sessions for “Analytical Mechanics” (40 h)
- **2015-2016 : E-Campus University (online)**
 - Full course (Lectures and Problem sessions) of “Analytical Mechanics”
- **2014-2015 : University of Milano (80h)**
 - Full course (Lectures and Problem sessions) of “Quantitative methods for social sciences” (60h)
 - Problem session for “Mathematics” (20h)
- **2014-2015 : Politecnico Milano (162 h)**
 - Problem sessions for “Analytical Mechanics” (112 h), “Mathematics and Mechanics of Solids” (20 h) and “Geometry and Linear Algebra” (30 h)
- **2014-2015 : E-Campus University (online)**
 - Full course (Lectures and Problem sessions) of “Analytical Mechanics”

- **2013-2014 : University of Milano (40h)**
 - Problem sessions for “Elements of Nuclear Physics” (20 h) and “Quantum Mechanics” (20 h)
- **2013-2014 : Politecnico Milano (82h)**
 - Problem sessions for “Analytical Mechanics” (72 h) and “Geometry and Linear Algebra” (10 h)
- **2013-2014 : E-Campus University**
 - Full course (Lectures and Problem sessions) of “Analytical Mechanics”
- **2012-2013 : University of Milano (40h)**
 - Problem sessions for “Elements of Nuclear Physics” (20 hours) “Quantum Mechanics” (20 h)
- **2012-2013 : Politecnico Milano (30h)**
 - Problem sessions for “Analytical Mechanics” (20 h) and “Geometry and Linear Algebra” (10 h)
- **2011-2012 : University of Milano (50h)**
 - Problem sessions for “Quantum Mechanics” (50 h)
- **2010-2011 : University of Milano (75h)**
 - Problem sessions for “Quantum Mechanics” (25 h), “Theoretical Physics” (20 h) and “Elements of Nuclear Physics” (30 h)
- **2009-2010 : University of Milano (20h)**
 - Problem sessions for “Quantum Mechanics” (20 h)
- **2006-2007 : University of Karlsruhe (24h)**
 - Problem sessions for “Theoretical Particle Physics I” (24 h)
- **2005-2006 : University of Grenoble (108h)**
 - Problem sessions and laboratory for “General Physics” (66 h) and “Fundamental Physics” (42 h)

Students

- **from 10/2022 : co-supervisor** of a **PhD student** (Simone Anedda) - U. of Cagliari
- **05/2024 - 09/2024 : supervisor** of a **Bachelor student** (Daniele Caboni) - U. of Cagliari
Thesis: “Livelli di Landau: dinamica quantistica di un elettrone in campo magnetico”
- **03/2024 - 07/2024 : supervisor** of a **Bachelor student** (Michele Cau) - U. of Cagliari
Thesis: “Dualità in elettromagnetismo: gli effetti Aharonov-Bohm e Aharonov-Casher”
- **11/2020 - 03/2021 : supervisor** of a **Bachelor student** (Alessandro Tamiglio) - U. of Pavia
Thesis: “Il tensore di Fradkin e la simmetria nel problema di oscillatore armonico”
- **05/2019 - 12/2019 : supervisor** of a **Bachelor student** (Federica Moroni) - U. of Pavia
Thesis: “Il vettore di Laplace-Runge-Lenz e la simmetria nel problema di Keplero e nell’atomo di idrogeno”
- **04/2012 - 09/2012 : co-supervisor** of a **Bachelor student** (Davide Napoletano) - U. of Milano
Thesis: “Studio dei contributi non perturbativi alla produzione di bosoni vettori ai collisori adronici”
- **11/2008 - 02/2009: external referee** for a **PhD thesis** (Luca Panizzi) - U. of Trieste
Thesis: “One-loop electroweak analysis for third family scalar quarks production at the LHC”
- **09/2004 - 09/2006: co-supervision** of a **PhD student** (B. Fuks) - LPSC, Grenoble

Organisation and coordination duties

- **Member** of the Local Organising Committee - CKM 2025 - Cagliari
- **Member** of the Local Organising Committee - Sar Wors 2025 - Cagliari
- **Chair** of IFAE (Incontri di Fisica delle Alte Energie) 2025 - Cagliari
- **Member** of the Local Organising Committee - Sar Wors 2023 - Cagliari
- **Member** of the Local Organising Committee - Transversity 2022 - Pavia
- **Member** of the Local Organising Committee - REF 2019 - Pavia
- **Member** of the INFN Scientific Committee of the "Asimov Prize" for science books
- **Member** of the Selection Committee (admissions) - Collegio Universitario S.Caterina, Pavia, 2018-2019
- **Member** of the Selection Committee for research grants - Physics Department - University of Pavia
- **Co-organiser** of the "Python-based methods and applications in Physics" course for the PhD in Physics at the University of Pavia (2021)
- **Co-organiser** of the "Strong Interactions" course for the PhD in Physics at the University of Pavia (2019)
- **Referee** for Physical Review D, Physical Review Letters, Nuclear Physics B, Journal of High Energy Physics, European Physics Journal C, Journal of Statistical Mechanics, International Journal of Modern Physics A
- Postdoctoral researchers' (elected) **representative** - University of Milano, 2009-2012
- **Organiser** of the Theoretical Physics Seminar Series in Milano, 2009-2012
- **Organiser** of the ITP Weekly Research Seminar in Karlsruhe, 2006-2008

Participation to research projects

- **Participation** to PRIN 2022 ("ProtoTaste - Tasting the flavor of the proton in its full dimensions")
- **Member** of the Electron-Ion Collider User Group
- **Member** of the LHC Electroweak Working Group
- **Member** of the MAP (Multidimensional Analysis of Partonic Distributions) Collaboration (Amsterdam, Cagliari, Edinburgh, Pavia, Paris)
- **Participation** to the 3DSPIN project (Consolidator Grant No. 647981 of the European Research Council)
- **Participation** to the STRONG 2020 project (funded by grant agreement No. 824093 of the European Union's Horizon 2020 research and innovation programme)
- **Participation** to the NINPHA Research Program (National Initiative on and physics of hadrons) of the Istituto Nazionale di Fisica Nucleare (INFN)
- **Participation** to PRIN 2008 ("Fisica di precisione del modello standard ai collider") and PRIN 2010-2011 ("Simmetrie, Masse e Misteri: Rottura della simmetria elettrodebole, Mescolamento dei sapori e violazione di CP e Materia oscura nell'era di LHC")
- **Participation** to the SFB-TR9 National Research Program ("Computational Particle Physics") of the *Deutsche Forschungsgemeinschaft* (DFG), 2006-2008
- **Participation** to the GDR-SUSY/COLLISIONNEURS National Research Program of the *Centre National de la Recherche Scientifique* (CNRS), 2004-2006

Outreach

- Editorial consultant for “Raffaello Cortina Editore” (“Scienza e Idee” series)
- Scientific and technical (LaTeX) consultant for “Codice edizioni” and “Treccani”
- Scientific and literary translations (ENG-ITA)
 - S. Carroll “The biggest ideas in the universe - Space, Time and Motion” - Dutton (“Le più grandi idee dell’universo - Spazio, Tempo e Movimento” - Raffaello Cortina Editore - 2024)
 - L.Susskind, A. Cabannes “The Theoretical Minimum - General Relativity” - Basic Books (“Relatività generale” - Raffaello Cortina Editore - 2023)
 - D. Griffiths, D. Schroeter “Introduction to Quantum Mechanics” - Cambridge University Press (“Introduzione alla meccanica quantistica” - Zanichelli Editore - 2022) (editor)
 - F. Krauss “The physics of climate change” - PostHill Press (“La fisica del cambiamento climatico” - Raffaello Cortina Editore - 2022)
 - J.J. Sakurai, J. Napolitano “Modern Quantum Mechanics” - Addison Wesley (“Meccanica quantistica moderna” - Zanichelli - Nuova edizione - 2021)
 - R. Panek “The Trouble with Gravity” - Houghton Mifflin Harcourt (“Il mistero sotto i nostri piedi” - Raffaello Cortina Editore - 2020)
 - L.Susskind, G. Hrabovsky “The Theoretical Minimum” - Basic Books (“Il minimo teorico” - Raffaello Cortina Editore - 2019)
 - S. Hossenfelder “Lost in Math” - Basic Books (“Sedotti dalla matematica” - Raffaello Cortina Editore - 2019)
 - N. Polson, J. Scott “AIQ” - St. Martin’s Press (“Numeri intelligenti” - UTET - 2019)
 - L. Susskind, A. Friedman “The Theoretical Minimum - Special relativity and classical field theory” (“Relatività ristretta e teoria classica dei campi” - Raffaello Cortina Editore - 2018)
 - D. Stipp “A most elegant equation” - Basic Books (“L’equazione di Dio - Eulero e la bellezza della matematica” - Codice Edizioni - 2018)
 - N. deGrasse Tyson “Astrophysics for people in a hurry” - W.W.Norton and Company (“Astrofisica per chi va di fretta” - Raffaello Cortina Editore - 2018)
 - L. Susskind, A. Friedman “The Theoretical Minimum - Quantum Mechanics” - Basic Books (“Meccanica quantistica” - Raffaello Cortina Editore - 2015)
 - J.J. Sakurai, J. Napolitano “Modern Quantum Mechanics” - Addison Wesley (“Meccanica quantistica moderna” - Zanichelli - 2013)
- Interactive installation on the concept of Void in physics, art and philosophy, selected for the International Festival “**The Story of Space**”, Goa, India, November 2017 (financial support by Italian Ministry of Foreign Affairs)
- *Coordinator* of the Physics section for the ViaLattea scientific divulgation website
- *Contributor* to the QueryOnline magazine of the Italian Skeptics Association (CICAP)
- Public speech
 - 27/09/2023 European Researchers Night, Cagliari - The daily routine of a researcher
 - 20/09/2022 European Researchers Night, Cagliari - Debunking of climate change denial
 - 17/09/2022 GravitasFest, Cagliari - Void in Physics and Art
 - 12/07/2022 Physics Department, Pavia - Speakable and unspeakable in data fitting
 - 03/12/2021 Liceo Scientifico Einstein, Milano - Life as a physicist

- 21/12/2020 Physics Department, Pavia - Theory-driven and data-driven problem solving
- 02/04/2020 Physics Department, Pavia - Speakable and unspeakable in data fitting
- 17/12/2019 Physics Department, Pavia - Common misunderstandings in science divulgation
- 26/09/2019 European Researchers Night, Pavia - Debunking of climate change denial
- 11/03/2019 Collegio Unversitario S.Caterina da Siena, Pavia - Void in Physics and Art
- 28/09/2018 European Researchers Night, Pavia - Statistics of gambling
- 07/04/2017 Liceo Scientifico N. Moreschi, Milano - Void and Elementary Particles
- 27/03/2014 Liceo Scientifico S.Ambrogio, Milano - Elementary Particles
- 24/05/2013 Liceo Scientifico Vittorio Veneto, Milano - Elementary Particles
- 09/11/2012 Circolo ARCI La Scighera, Milano - The Higgs Boson

Other skills

- **Foreign languages**

- *Italian*: native *English*: fluent *French*: fluent

- **Computing**

- *Programming*: advanced knowledge of Fortran 77/90, C/C++, Python, Mathematica
- *Scripting*: Python, Bash
- *Version control*: SVN, Git, GitHub, GitLab
- *Documentation*: TeX, LaTeX, Beamer, HTML
- *Data Visualisation*: Matplotlib, Gnuplot, ROOT
- *Environments*: Linux, MacOS

- **Volunteering**

- Italian Red Cross - Volunteer: first aid in emergencies, ambulance, support for refugees, international cooperation, first-aid teaching for schools and private companies: (2009-present)

- **Music**

- Polyphonic Choir “V. Galilei” (Pisa) - Bass/Baritone: baroque and renaissance music (1995-2001)
- Polyphonic Choir “Città Studi”(Milan) - Bass/Baritone: baroque music (2011-2015)
- Polyphonic Ensemble “Aenigma” (Milan) - Bass/Baritone: early baroque and renaissance music (2014-2021)