

Antonio Branca

Curriculum Vitae

Contact info

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Research interests

My research interests focus on experimental neutrino physics and Dark Matter searches. In particular, I have worked on the development of monitored neutrino beams in the NP06/ENUBET experiment, and on the search for Dark Matter and neutrino-less double beta decay ($0\nu\beta\beta$) in the CUORE experiment. I have also contributed to the search for dark matter candidates in AURIGA and, more recently, to the development of novel imaging and readout techniques in liquid argon TPCs (PRIN 2022). In the early stages of my career, I gained experience in high energy collider physics by contributing to the CMS experiment at CERN.

Experience and career

- 12/2023 - present: **Researcher (RTD-B)**
- Institution: Università di Milano-Bicocca
- 03/2020 - 11/2023: **Researcher (RTD-A)**
- Institution: Università di Milano-Bicocca
- 04/2019 - 02/2020: **Postdoctoral fellowship (Assegno di Ricerca)**
- Institution: Università di Padova
- 08/2018 - 03/2019: **Research Scholarship (Borsa di studio per attività di ricerca)**
- Institution: Università di Milano-Bicocca
- 07/2017 - 06/2018: **Postdoctoral fellowship (Assegno di Ricerca)**
- Institution: Università di Padova
- 07/2015 - 06/2017: **Postdoctoral fellowship (Assegno di Ricerca)**
- Institution: INFN Sezione di Padova
- 01/2012 - 12/2012: **Contract of Association - Similfellow**
- Institution: CERN
- 09/2009 - 12/2009: **Fellowship for young post-graduates**
- Institution: INFN

Education

- 04/2013: **Ph.D. in Physics**
 - Institution: Università di Padova
- 03/2009: **Master Degree in Physics**
 - Institution: Università di Padova
- 09/2006: **Bachelor Degree in Physics**
 - Institution: Università di Padova

Training schools

- 2-6/05/2017: **RegML 2017: Regularization Methods for Machine Learning**
 - Institution: SIMULA Research Laboratory
- 3-7/04/2017: **VII International Course “Detectors and Electronics for High Energy Physics, Astrophysics, Space Applications and Medical Physics”**
 - Institution: INFN - LNL
- 9-13/05/2016: **XVIII LNF Spring School “Bruno Touschek” in Nuclear, Subnuclear and Astroparticle Physics**
 - Institution: INFN - LNF
- 9-13/11/2015 **2nd GraWIToN School on Gravitational Wave data analysis**
 - Institution: GSSI
- 14-25/09/2015: **2015 CERN School of Computing**
 - Institution: CERN
- 10-20/07/2011: **CTEQ School**
 - Institution: University of Wisconsin
- 25-27/11/2009: **III School for INFN GRID users**
 - Institution: Università di Bologna
- 08/2008-09/2008 **Fermilab Summer Student**
 - Institution: FNAL

Teaching and Outreach

Co-Supervisor of the thesis work for the degree in Physics of 10 Bachelor, 4 Master and 2 Ph.D. (ongoing) students. Supervisor of 1 foreign student for its internship work.

Teaching activity:

- From A.A. 2019/2020 to 2024/2025: Teaching activity (incarico didattico universitario) in electronics and optics laboratory (Laboratorio 2) - 2nd year - University of Milano-Bicocca;

- A.A. 2017/2018 - A.A. 2018/2019: Teaching activity (incarico di supporto alla didattica retribuito): electronics and optics laboratory (Laboratorio 2) - 2nd year - University of Milano-Bicocca;
- A.A. 2014/2015: Teaching activity (incarico di supporto alla didattica retribuito) in physics laboratory for the Engineering course - 1st year - University of Padova;

Outreach activity:

- [Fisica passe-partout](#) Summer School, 10-14 June 2024;
- [HOP Hands-On Physics](#) project. Training days 06/11/2023 and 05/12/2024;

Collaborations

- 01/01/2023 - present: Member of the ESSnuSB+ Collaboration;
- 01/03/2020 - present: Member of the DUNE International Collaboration;
- 01/04/2019 - present: Member of the ENUBET International Collaboration;
- 01/07/2015 - present: Member of the CUORE International Collaboration;
- 01/01/2016 - 31/12/2016: Participation to the AURIGA Collaboration;
- 01/10/2009 - 31/07/2017: Member of the CMS International Collaboration;

Responsibilities

- 01/01/2023 - present: Responsible for the detector simulation in the WP6 (development of a monitored neutrino beam at the European Spallation Source) of ESSnuSB+;
- 01/05/2022 - 15/08/2024: Member of the Publication Board of the CUORE experiment;
- 01/09/2021 - present: L2 Physics Coordinator of the simulation and physics performance Working Group of the CERN NP06/ENUBET experiment (25 persons);
- 01/07/2020 - 31/12/2023: Responsible within the INFN Milano-Bicocca (responsabile locale) for the ENUBET_2 experiment. INFN reference area CSN2, neutrino physics;
- 01/04/2019 - present: Coordinator of the simulations for the tagged neutrino beam NUTECH project (Bando MIUR FARE 2016 codice progetto R1623F4S38);
- 01/01/2018 - 31/05/2021: Coordinator of the Low Energy Analysis Working Group (10 persons) of the CUORE experiment;
- 01/04/2017 - present: Responsible for the development and maintenance of the offline data acquisition system and of the Optimal Trigger (OT) algorithm for the CUORE experiment at LNGS;
- 2016 - 2024: Expert detector operations and analysis shifter for the CUORE experiment;
- 01/11/2016 - 31/10/2018: Member of the Vetting Board of the CUORE Collaboration;
- 01/01/2011 - 31/12/2012: Responsible for the development and maintenance of the data quality monitoring software (DQM) for the CMS Drift Tube muon sub-detector;

- 2012: Responsible for the quality certification of the data collected by the CMS Drift Tube muon sub-detector;
- 2010 - 2012: Expert shift on-call for the CMS Drift Tube muon sub-detector;

Research Grants

- Winner of the PRIN 2022 Project: A fast lens based imaging device for liquid argon detectors for neutrino, particle, and medical physics applications. Role: Associated Investigator (Substitute PI) and local responsible (Responsabile di unità) of Milano Bicocca. Assigned funds: 210.000 euro;

Prizes

- *CMS 2012 Achievement Award* for important contributions to the data quality monitoring system and data quality certification tools of the Drift Tube muon sub-detector;

Editorial activity

- guest editor for the special issues:
 - title: [New Advances in Nuclear Systems, Reactor Physics, and Neutrino Monitoring of Reactors](#), MDPI - Energies (ISSN 1996-1073);
 - title: [Neutrinos from Artificial Sources](#), MDPI - Universe (ISSN 2218-1997);
- 2019 - present: performing peer reviews for the following scientific international journals:
 - Journal: Physical Review D - Publisher: American Physical Society;
 - Journal: Physical Review Letters - Publisher: American Physical Society;
 - Journal: Nuclear Instruments and Methods in Physics Research Section A - Publisher: Elsevier
 - Journal: Universe - Publisher: MDPI;
 - Journal: Instruments - Publisher: MDPI;
 - Journal: Atoms - Publisher: MDPI;
 - Journal: Applied Sciences - Publisher: MDPI;

Conferences

Organization:

- Member of the Local Organizing Committee of [Neutrino 2024](#), June 16-22, 2024 Milan, Italy

Talks:

- Participation to 13 international and 1 national conferences: [INPC 2022](#), [IDM 2022](#), [ICHEP 2022](#), [Blois 2021](#), [NuFact 2021](#), [GDR Neutrino Meeting](#), [EPS-HEP 2019](#), [PM2018](#), [WIN2017](#), [12th Patras Workshop on Axions, WIMPs and WISPs](#), [5th Young Researchers Workshop - Physics Challenges in](#)

the LHC Era, Kruger2012, NTHEP2011, SIF2010. Talks given: 6 in plenary sessions, 7 in parallel sessions and 1 invited in parallel session.

Posters:

- Participation to 5 international conferences with poster presentation: PANIC2021, Neutrino2020, NuPhys2019, TAUP2019, NuPhys2016.

Full list of publications

- Total number of publications: 451
- Total number of citations: 39441
- h-index: 98
- Source: Web of Science, <https://www.webofscience.com/wos/woscc/citation-report/e6ae854b-5775-41ea-8f85-d62ae978b88e-959771fb>