

Particle Physics Research Centre
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Academic Qualifications

- 2012 Postgraduate Certificate in Academic Practice (PGCAP), Queen Mary University of London (QMUL).
2001 Ph.D., Torino University, Italy.
Thesis Title: *Analysis of two-body charmless decays for branching fraction and CP-violating asymmetry measurements with the BaBar experiment.*
1998 MPhys. Physics, Torino University, Italy.
Full marks with honours: 110/110 *magna cum laude* and *honourable mention*.
Thesis title: *B and anti-B decay vertex reconstruction in the BaBar experiment.*

Employment History

- Since 2021 Royal Society Leverhulme Trust Senior Research Fellow.
Since 2020 Reader in Particle Physics, School of Physics and Astronomy, QMUL.
2017-2020 Senior Lecturer in Particle Physics, School of Physics and Astronomy, QMUL.
2009-2017 Lecturer in Particle Physics, School of Physics and Astronomy, QMUL.
2007-2009 Research Fellow, CERN, Switzerland.
2005-2007 Research Associate, CNRS and *Laboratoire d'Annecy-le-Vieux de Physique des Particules* (LAPP), Annecy, France.
2001-2005 Research Associate, Torino University, Italy.
1998-1999 Teaching fellow, Torino University, Italy.

Research Topics

I am currently leading or contributing to the following analyses:

- ATLAS Test of Lepton Flavour Universality in b to $s\ell\ell$ transitions in B mesons decaying in $K^*\ell\ell$: *leading role and paper editor.*
ATLAS Searches for semi-visible jets: *original proponent and leading role.*
ATLAS Measurement of the rare B decay (B and B_s to $\mu\mu$) branching ratios: *original author of the strategy and main analyser.*
ATLAS Searches for dark jets: *supervision and paper editor.*
LHC LHC combinations of rare B decay (B and B_s to $\mu\mu$) branching ratios and of the CP violation parameters from time-dependent angular analysis in $B_s \rightarrow J/\psi\phi$: *leading role and paper editor.*
HFLAV 2021 update of the measurements of B-meson lifetimes and oscillation parameters: *leading role and paper editor.*
UTfit 2021 update of the global flavour fit within and beyond the Standard Model: *leading role and paper editor.*
SAPIENS Data collection, analysis and modelling of traffic data in Mexico City: *leading role and paper editor.*

Most Recent Research Roles, Professional Bodies, Peer-review Activities, Awards

- Since 2021 Alan Turing Fellow.
- 2021 Reviewer/panellist for FY2022 University Comparative Review - Energy Frontier, Office of Science, U.S. Department of Energy, November-December 2021.
- 2021 Organiser of the Flavour Anomalies workshop held at CERN, October 20th 2021, with the patronage and attendance of the CERN General Director, Fabiola Gianotti.
- Since 2020 CERN SPSC scientific committee member. Lead reviewer of NA62 experiment and MuonE proposal. Reviewer of experiments and proposals: NA61, NA64, and SHiP.
- Since 2020 Principle Investigator of SAPIENS project for air quality monitoring in Mexico City, seed funding from the Challenge-Led Global Research Collaboration Initiative, QMUL-IPN (Instituto Politécnico Nacional).
- 2020 Reviewer/panellist for FY2020 University Comparative Review - Energy Frontier, Office of Science, U.S. Department of Energy, February-March 2020.
- 2020 Recipient of the QMUL Faculty of Science and Engineering Award for Internationalisation 2020.
- 2019-2021 Convener of the B Physics and Light States Working Group of the ATLAS collaboration.
- Since 2018 Member of the Heavy Flavour Averaging Group (HFLAV).
- Since 2017 UK delegate of Advisory Committee of CERN Users (ACCU).
- 2017-2018 Member of STFC CERN Fellowship panel. In 2018, chair of the panel.
- Since 2016 Peer reviewer for Nature, JHEP and various national (UK, IT, FR, NL, PL) or European (ERC) grant programmes .
- Since 2016 ATLAS Level 1 Calorimeter Trigger and Upgrade Team Leader for QMUL.
- 2012-2016 Analysis leader for the rare B decay $B_{(s)}^0 \rightarrow \mu^+ \mu^-$ study at ATLAS.
- 2015-2017 Convener of the B Physics Working Group of the ATLAS UK collaboration.
- Since 2014 Member of the STFC Particle Physics Users Advisory Committee.
- 2012-2015 Sub-convener of the Rare B Decays Working Group of the ATLAS collaboration.
- Since 2003 Member and co-founder of the phenomenological collaboration UTfit.

Most Recent Main Engagements with Society, Diversity and Impact Activities

- 2021 Speaker at School of Physics and Astronomy Colloquium “Are we seeing signs of new particles?”.
- 2019-2020 Organiser and speaker at QMUL “Dark Matter day” events.
- 2018 Pint of Science public event: talk in a London pub.
- 2011-2017 Member of the Juno committee and Athena Swan committee. Juno Champion and chair of the committee (2012-2013), deputy (2013-2016). Attendance to workshops and organiser of meetings and activities (e.g. SPA women lunch and SPA International Women Day events). Main editor of the Bronze successful submission. Editor of the Silver successful submission.
- 2016 Presenter (talk and poster) of Project JUNO on behalf of the Institute of Physics at the International Conference of High Energy Physics (ICHEP2016), Chicago, USA.
- Since 2007 Official CERN guide. Engaging regularly as tour guide for the CERN Visits Service and the ATLAS collaboration.

Most Recent Conference Contributions

Convenerships and Organisation:

- 2021 Organiser of “First SAPIENS International Workshop”, at IPN, Mexico.
- 2021 Organiser and Session Chair of the “Flavour Anomaly Workshop”, at CERN.
- 2020 Co-organiser of “GRADnet Machine Learning and AI Workshop”, at QMUL.
- 2019 Parallel Session convener at the Large Hadron Collider Physics Conference, Puebla, Mexico.
- 2015 Co-organiser of the conference QCD@LHC, London, UK.
- 2014 Co-organiser of the conference “50 years of CP violation”, London, UK.
- Since 2014 Co-founder and co-organiser of the conference series Interplay between Particle and Astroparticle Physics (IPA). Part of the International Advisory Committee.

Talks in Main Conferences:

- 2021 Parallel talk at TeV Particle Astrophysics 2021 (TeVPA 2021), online.
- 2021 Invited talk at the “Anomalies and Precision in the Belle II Era” workshop, online.
- 2021 Parallel talk at the European Physical Society Conference on High Energy Physics (EPS21), online.
- 2021 Parallel talk at the 19th Flavour Physics and CP Violation Conference (FPCP 2021), online.
- 2020 Parallel talk at the 40th International Conference of High Energy Physics (ICHEP20), online.
- 2020 Plenary talk at 26th Nordic Particle Physics Meeting (Spatind 2020), Skeikampen, Norway.
- 2019 Invited talk at “Rare Semileptonic B decays, Theory and Experiment (bsll2019)”, Lyon, France.
- 2019 Parallel talk at the 7th Annual Large Hadron Collider Physics conference (LHCP19), Puebla, Mexico.
- 2019 Invited talk at “Towards the Ultimate Precision in Flavour Physics” workshop, Durham, UK.
- 2018 Plenary talk and parallel talk at the 10th International Workshop on the CKM Unitarity Triangle (CKM18), Heidelberg, Germany.
- 2018 Parallel talk at the 16th Conference on Flavour Physics and CP Violation (FPCP18), Hyderabad, India.

Selected Publications

In the field of high-energy particle physics, articles are published including in the author list all the members of the collaboration in alphabetical order. Hence, I have authored 1469 peer-reviewed publications: 38 renowned papers with more than 500 citations and 75 famous papers with more than 250 citations. My high-energy physics h-factor is 190. This is the complete list of publications: Marcella Bona’s HepNames Profile.

However, please see here below the list of the main peer-reviewed articles to which I have contributed in the recent years. I include a comment of my impact and involvement in each of them and prioritise the most recent or relevant publications.

- [1] ATLAS Collaboration, *Search for new phenomena in final states with b-jets and missing transverse momentum in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector*, JHEP **05**, 093 (2021) doi:10.1007/JHEP05(2021)093 [arXiv:2101.12527 [hep-ex]]. *Main author of the Dark Matter search and main paper editor.*

- [2] ATLAS Collaboration, *Measurement of the relative B_c^\pm/B^\pm production cross section with the ATLAS detector at $\sqrt{s} = 8$ TeV*, Phys. Rev. D **104**, no.1, 012010 (2021) doi:10.1103/PhysRevD.104.012010 [arXiv:1912.02672 [hep-ex]]. *Editorial Board member, main author and paper editor of the publication stage.*
- [3] Y. S. Amhis *et al.* [HFLAV], *Averages of b -hadron, c -hadron, and τ -lepton properties as of 2018*, Eur. Phys. J. C **81**, no.3, 226 (2021) doi:10.1140/epjc/s10052-020-8156-7 [arXiv:1909.12524 [hep-ex]]. *HFLAV ATLAS representative and paper editor.*
- [4] E. Kou *et al.* [Belle-II Collaboration], *The Belle II Physics Book*, PTEP **2019**, no. 12, 123C01 (2019) doi:10.1093/ptep/ptz106 [arXiv:1808.10567 [hep-ex]]. *Co-author of the new physics and global analysis work and sections.*
- [5] ATLAS Collaboration, *Search for dark matter produced in association with bottom or top quarks in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector*, Eur. Phys. J. C **78**, no. 1, 18 (2018) doi:10.1140/epjc/s10052-017-5486-1 [arXiv:1710.11412 [hep-ex]]. *Supervision, background studies and cross-checks, internal documentation editor.*
- [6] ATLAS Collaboration, *Study of the rare decays of B_s^0 and B^0 into muon pairs from data collected during the LHC Run 1 with the ATLAS detector*, Eur. Phys. J. C **76**, no. 9, 513 (2016) doi:10.1140/epjc/s10052-016-4338-8 [arXiv:1604.04263 [hep-ex]]. *Main author of the analysis and main editor of the paper.*
- [7] ATLAS Collaboration, *Measurements of the W production cross sections in association with jets with the ATLAS detector*, Eur. Phys. J. C **75**, no. 2, 82 (2015) doi:10.1140/epjc/s10052-015-3262-7 [arXiv:1409.8639 [hep-ex]]. *Co-author of the analysis and editor of the paper.*
- [8] ATLAS Collaboration, *A measurement of the ratio of the production cross sections for W and Z bosons in association with jets with the ATLAS detector*, Eur. Phys. J. C **74**, no. 12, 3168 (2014) doi:10.1140/epjc/s10052-014-3168-9 [arXiv:1408.6510 [hep-ex]]. *Co-author of the analysis.*
- [9] M. Bona *et al.* [UTfit Collaboration], *An Improved Standard Model Prediction Of $BR(B \rightarrow \tau\nu)$ And Its Implications For New Physics*, Phys. Lett. B **687**, 61 (2010) doi:10.1016/j.physletb.2010.02.063 [arXiv:0908.3470 [hep-ph]]. *Main author of the analysis and the paper.*