Dr Marcella Bona

Reader in Particle Physics

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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 2020	Reader in Particle Physics, School of Physics and Astronomy, QMUL.
2021-2023	Royal Society Leverhulme Trust Senior Research Fellow.
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 $B_s \to J/\psi\phi$: *main author.*
HFLAV	2021 update of the measurements of B-meson lifetimes and oscillation parameters: *ATLAS representative, main collaborator 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.*

Research Roles, Professional Bodies, Peer-review Activities, Awards.

Since 2024	Evaluation expert for the Italian Evaluation of Research Quality exercise (VQR), 2020-2024.
Since 2024	Reviewer for the competitive funding procedure for the Italian Science Fund, 2022-2023 call.
Since 2023	Convener of the Weak Decay working group within the B and Light states ATLAS working group.
Since 2022	ATLAS Analysis Contact for $R(K*)$ analysis and semi-visible jet searches.
2022-2023	Convener of the Rare Decay working group within the B and Light states ATLAS working group.
2021-2023	Alan Turing Fellow.
Since 2020	CERN SPSC scientific committee member. Part of the SPSC ECN3 Task Force. 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).
Since 2018	Member of the Heavy Flavour Averaging Group (HFLAV).
Since 2016	CERN ATLAS Deputy Team Leader for QMUL.
Since 2016	ATLAS Level 1 Calorimeter Trigger and Upgrade Team Leader for QMUL.
Since 2014	Member of the International Advisory Committee of Interplay of Particle and Astroparticle Physics (IPA) conference.
Since 2014	Member of the STFC Particle Physics Users Advisory Committee.
Since 2003	Member and co-founder of the phenomenological collaboration UTfit.
2023	Reviewer/panellist for FY2023 University Comparative Review - Energy Frontier, Office of Science, U.S. Department of Energy, 2023.
2021	Reviewer/panellist for FY2022 University Comparative Review - Energy Frontier, Office of Science, U.S. Department of Energy, 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. 584 registered attendees in in-person and online hybrid format.
2020	Reviewer/panellist for FY2020 University Comparative Review - Energy Frontier, Office of Science, U.S. Department of Energy, 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.
2017-2023	UK delegate of Advisory Committee of CERN Users (ACCU).
2017-2018	Member of STFC CERN Fellowship panel. In 2018, chair of the panel.
2012-2016	Analysis leader for the rare B decay $B^0_{(s)} \to \mu^+\mu^-$ study at ATLAS.
2015-2017	Convener of the B Physics Working Group of the ATLAS UK collaboration.
2012-2015	Sub-convener of the Rare B Decays Working Group of the ATLAS collaboration.
2010-2016	Atlas Semi-Conductor Tracker (SCT) institute representative.

Most Recent Conference Contributions

Convenerships and Organisation:

2023	Organiser and Session Chair of the "21st Conference on Flavor Physics and CP Violation (FPCP 2023)", at Lyon, France.

2022 Part of the International Advisory Committee for "IPA2022: Interplay between Particle and Astroparticle physics 2022", in Vienna, Austria.
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.
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:

2024 Invited talk at "The Flavour Path to New Physics" workshop, Zurich, Switzerland.
2023 Parallel talk at the "12th International Workshop on the CKM Unitarity Triangle", Santiago de Compostela, Spain.
2023 Parallel talk at "21st Conference on Flavour Physics and CP Violation (FPCP 2023)", Lyon, France.
2022 Parallel talks at "41st International Conference on High Energy Physics (ICHEP 2022)", Bologna, Italy.
2022 Invited talk at "8th Workshop on Theory, Phenomenology and Experiments in Flavour Physics (FPCapri2022)", Anacapri, Italy.
2022 Invited talk at "Future flavours: Prospects for beauty, charm and tau physics", online.
2022 Parallel talk at "10th Annual Large Hadron Collider Physics (LHCP2022)", online.
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 (Spaatind 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.
2017 Parallel talk at the International Europhysics Conference on High-Energy Physics 2017 (EPS17), Venice, Italy.
2017 Two parallel talks at the 5th Annual Large Hadron Collider Physics conference (LHCP17), Shanghai, China.

Selected Publications

I have authored more than 1500 peer-reviewed publications: 55 renowned papers with more than 500 citations and 104 famous papers with more than 250 citations. My high-energy physics h-factor is 215. 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.

[1] ATLAS Collaboration, *Search for resonant production of dark quarks in the dijet final state with the ATLAS detector*, JHEP **02**, 128 (2024) doi:10.1007/JHEP02(2024)128 [arXiv:2311.03944 [hep-ex]].

[2] M. Bona *et al.* [UTfit], *New UTfit Analysis of the Unitarity Triangle in the Cabibbo-Kobayashi-Maskawa scheme*, Rend. Lincei Sci. Fis. Nat. **34**, 37-57 (2023) doi:10.1007/s12210-023-01137-5 [arXiv:2212.03894 [hep-ph]].

[3] Y. S. Amhis *et al.* [Heavy Flavor Averaging Group and HFLAV], *Averages of b-hadron, c-hadron, and τ-lepton properties as of 2021*, Phys. Rev. D **107**, no.5, 052008 (2023) doi:10.1103/PhysRevD.107.052008 [arXiv:2206.07501 [hep-ex]].

[4] 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]].

[5] 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]].

[6] 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]].

[7] M. Aaboud *et al.* [ATLAS], *Study of the rare decays of B_s^0 and B^0 mesons into muon pairs using data collected during 2015 and 2016 with the ATLAS detector*, JHEP **04**, 098 (2019) doi:10.1007/JHEP04(2019)098 [arXiv:1812.03017 [hep-ex]].

[8] 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]].

[9] 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]].

[10] 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]].

[11] M. Bona *et al.* [UTfit Collaboration], *An Improved Standard Model Prediction Of BR($B \to \tau\nu$) 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]].