ALESSANDRO BARONE | CV

Sex: Male (he/him) | Date of Birth: 16/05/1994 | Nationality: Italian

B46/4005 University of Southampton, SO17 1BJ, Southampton, UK

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❱ Interests: Lattice Field Theory, QCD, Heavy Quarks, Algorithms

❱ Skills: Python, C++, Bash, Git, HPC

❱ Languages: Italian (native), English (C1), French (C1)

❱❱❱ Education

2019 - now	**PhD in Theoretical Particle Physics**	University of Southampton

I am working in the Lattice QCD group under the supervision of Prof. Andreas Jüttner. My main PhD project focuses on the study of inclusive semi-leptonic decays of $B_{(s)}$ and $D_{(s)}$ mesons through Lattice QCD simulations, where I am the principal investigator. I took care of the generalisation of the theoretical approach to inclusive decays and inverse problems, the generation of the data for the $B_{(s)} \to X_c l \nu_l$ decays and the final analysis and preparation of publication. I am also collaborating closely with Prof. Shoji Hashimoto and Prof. Takashi Kaneko at KEK (Tsukuba, Japan).

2016 - 2019	**Master's Degree, Theoretical Physics** (110/110 cum laude)	University of Bologna

I carried out my dissertation under the supervision of Prof. Michele Cicoli. In particular, I focused on phenomenological and cosmological implications of 4D string compactifications. The title of my dissertation is: The cosmological moduli problem in multi-field string inflationary models. During the whole duration of the master I was also student of the **Collegio Superiore**, which is an institution of excellence that offers an interdisciplinary education program to selected students enrolled in an academic degree at the University of Bologna.

2013 - 2016	**Bachelor's Degree, Physics** (110/110 cum laude)	University of Pavia

Final project on hadrons physics, quark model and QCD with title "Hadronic physics: from the quark model to QCD" under the supervision of Prof. Daniela Rebuzzi.

❱❱❱ Experience

2019 - now	**Teaching Assistant**	University of Southampton

As an integral part of my PhD, I am a Teaching Assistant for two undergraduate courses, in particular "Nuclei and Particles" and "Statistical Mechanics". My tasks consisted in coordinating a pool of 3-6 demonstrators, helping the students during problem classes and marking weekly problem sheets and part of the final exams. I also demonstrated in other courses such as "Classical Mechanics", "Electricity and Magnetism" and "Electromagnetism".

09/2019 - 03/2020	**Proofreader (external collaborator)**	Zanichelli editore S.p.A

Zanichelli is one of the main Italian publishing companies for textbooks for school, university and professional books. My job as an external collaborator was to write guided solutions for the physics exercises appearing in three different math high school textbooks.

❱❱❱ Scholarships and awards

2022	**PI for Short-Term Fellowship for Research in Japan**	JSPS

I have been successful in my application to the Japan Society for the Promotion of Science (JSPS) to secure 1M yen (roughly £6200) funding to spend 4 months at KEK (Tsukuba, Japan) in 2023 to work on my project "$B_{(s)}$ and $D_{(s)}$ mesons inclusive semi-leptonic decays from Lattice QCD" together with Prof. Shoji Hashimoto and Prof. Takashi Kaneko.

2019/2023	**Mayflower Scholarship for PhD studies**	University of Southampton
2017-2018	**Scholarship for Excellent Students of Collegio Superiore**	University of Bologna
2013/2015	**Scholarship for Excellent Students**	Ministry of Education (Italy)

❯❯❯ Publications and proceedings

- Inclusive semi-leptonic $B_{(s)}$ mesons decay from Lattice QCD, **AB**, S. Hashimoto, A. Jüttner, T. Kaneko and R. Kellermann (In preparation)
- Inclusive semi-leptonic $B_{(s)}$ mesons decay at the physical b quark mass, **AB**, S. Hashimoto, A. Jüttner, T. Kaneko and R. Kellermann, PoS **LATTICE2022** [arXiv:2211.15623]
- Inclusive semi-leptonic decays of charmed mesons with Möbius domain wall fermions, **AB**, S. Hashimoto, A. Jüttner, T. Kaneko and R. Kellermann, PoS **LATTICE2022** [arXiv:2211.16830]
- A variance reduction technique for hadronic correlators with partially twisted boundary conditions, N. Asmussen, **AB**, A. Jüttner, PoS **LATTICE2021** (2022), 090 doi:10.22323/1.396.0090 [arXiv:2112.09089]

❯❯❯ Talks, seminars and workshop organisation

6-7/09/2022	**From Particle Physics to Gravitation: the Crossover with Data Science**	Southampton, UK
	Leading organiser. I successfully applied for funding (£5000) to organise one of the SEPnet student-led conference. In particular, the conference addressed the necessity of Data Science and High Performance Computers in Theoretical Physics, and covered topics from particle physics - such as phenomenology and lattice QCD - to gravitation and cosmology, with a particular focus on the application of techniques from fields like artificial intelligence, ML and data generation.	
12/08/2022	**Lattice 2022**	Bonn, Germany
	Speaker, Inclusive semi-leptonic $B_{(s)}$ mesons decay at the physical b quark mass.	
21/06/2022	**TH Informal Lattice Meeting (virtual)**	CERN, Switzerland
	Invited speaker, Inclusive semi-leptonic $B_{(s)}$ mesons decay from Lattice QCD.	
17/06/2022	**Quirks in Flavour Physics**	Zadar, Croatia
	Speaker, Inclusive semi-leptonic $B_{(s)}$ mesons decay from Lattice QCD.	
13/12/2021	**BNL-HET & RBRC Joint Workshop"DWF@25"(virtual)**	BNL, USA
	Invited Speaker, A variance reduction technique for hadronic correlators with partially twisted boundary conditions.	
29/06/2021	**Lattice 2021 (virtual)**	MIT, USA
	Speaker, A variance reduction technique for hadronic correlators with partially twisted boundary conditions.	

❯❯❯ Additional Training

18-23/09/2022	**LatticeNET School on Computing in HEP**	Benasque Center for Physics
22/08/2021 - 03/09/2021	**EuroPLex Summer School 2021 (virtual)**	University of Edinburgh
12-30/07/2021	**Methods of Effective Field Theory and Lattice Field Theory**	Bad Honnef Physics School
1-5/03/2021	**EXALAT School - binaries (virtual)**	EXALAT
15-16/02/2021	**EXALAT School - GPU coding (virtual)**	EXALAT
01/2021	**BUSSTEP 50 (virtual)**	Queen Mary University of London
02-13/03/2020	**PREFIT School**	DESY