Marta Borchiellini

PhD candidate @ University of Groningen   ✉ borchiellini.marta@gmail.com

Education

2021 - expected January 2026	**Ph.D. - Kapteyn Astronomical Institute, University of Groningen** *Cosmic ray antideuterons as a probe for new physics*
2020-2021	**II Level University Master Course** **"Mathematical and Physical methods for Space Sciences"** University of Turin
2016-2020	**Master's Degree in Theoretical Physics - University of Turin** *Dark Matter-baryon scattering imprints on the neutral hydrogen 21-cm cosmological signal*

Grants and Fellowships

2022, 2023, 2024	**LKBF subsidy**
2020 - 2021	**INFN Fellowship**

Publications

Refereed

M. Borchiellini, D. Maurin and M. Vecchi, Revisiting electron capture decay for Galactic cosmic-ray data, Submitted to Astropart. Phys.

M. Borchiellini, L. Mano, F. Barão and M. Vecchi, Feature Selection Techniques for CR Isotope Identification with the AMS-02 Experiment in Space, Particles **7** (2024) no.2, 417-434

Conference proceedings

M. Borchiellini, D. Maurin and M. Vecchi, The role of electron capture decay in the precision era of Galactic cosmic-ray data, PoS ICRC2023 (2023), 066

Other research experience

Spring - Summer 2021	**Internship at INFN Turin** *Exploiting SFB decomposition to study the observable photometric galaxy clustering*
Summer 2017	**Internship at Max Planck Institut für Kernphysik, Heidelberg** *Disentangling multiple emission components in the Vela X pulsar wind nebula with the Cherenkov Telescope Array*

Summary of conference contributions

Talks

July 2024	**17th Marcel Grossmann meeting** Ancona, Italy
June 2024	**28th Symposium on Astroparticle Physics in the Netherlands** Soesterberg, The Netherlands

January 2024	**NWO Physics 2024**
	Veldhoven, The Netherlands
2017	**CTA Face 2 Face meeting**
	Heidelberg, Germany

Posters

April 2024	**EuCAIFCon - European AI for Fundamental Physics Conference**
	Amsterdam, The Netherlands
August 2023	**ICRC - International Comic Ray Conference**
	Nagoya, Japan

Teaching activities

Teaching experience

2024/2025	**Teaching Assistant for the course Astroparticle physics**
	MSc degree in Physic and Astronomy, University of Groningen (in English)
2023/2024	**Teaching Assistant for the course Astrophysical Hydrodinamics**
	BSc degree in Physic and Astronomy, University of Groningen (in English)
2022/2023	**Teaching Assistant for the course Astroparticle physics**
	BSc degree in Physic and Astronomy, University of Groningen (in English)

Supervision experience

Spring 2024	**2 BSc thesis**
	"Antideuteron Searches in Cosmic Rays"
Spring 2023	**BSc thesis**
	"Applications of Boosted Decision Trees for Cosmic Ray Particle Identification"

Participation in Astroparticle Physics Experiments

Since 2022	**Alpha Magnetic Spectrometer**
	Research Topic: Cosmic-ray Antideuterons

Other Activities

2022-2024	**Member of the Machine Learning Journal Club**
Sep 2021-Ongoing	**Member and President of Young Minds Groningen**
	The group is part of an EPS initiative and is mainly involved in outreach activities including the organisation of an event for the International day of women and Girls in Science since 2020. I have been president and the main organiser of the activities of the section between 2022 and 2023 and from 2024.

Programming skills

Languages: Python, C++, Julia, bash

Frameworks and libraries: ROOT, scikit-learn, XGBoost

Other: Git, OOP

Languages

Italian: Mother tongue	**French:** Pre-Intermediate, A2-B1
English: Fluent, C1	**Dutch:** Beginner, A1