

Keywords: analysis of cosmological simulations, study of gas dynamics in galaxy clusters and filaments, quantification of the physics processes contributing to the hydrostatic mass bias

RESEARCH EXPERIENCES

- **PhD** Oct 2022 - present
Institut d'Astrophysique Spatiale (IAS) Orsay, France
 – Title: "Mass calibration from constrained simulations: towards bias-free scaling relations for galaxy clusters."
 – Supervisors: Nabila Aghanim & Jenny Sorce
 – Expected defence date : September 2025
- **2nd year Master Degree research internship** Mar 2022 - Jun 2022
Institut d'Astrophysique Spatiale (IAS) Orsay, France
 – Project: Study of a constrained zoom-in simulation of the Virgo cluster
 – Supervisors: Nabila Aghanim & Jenny Sorce
- **1st year Master Degree research internship** May 2021 - Jul 2021
Institut d'Astrophysique Spatiale (IAS) Orsay, France
 – Project: Study of galaxy clusters pressure profiles in the IllustrisTNG simulation
 – Supervisors: Nabila Aghanim & Hideki Tanimura
- **Bachelor research internship** Jan 2020
Laboratoire de Physique SUBAtomique et TECHnologies associées (SUBATECH) Nantes, France
 – Project: Calibration of the XENON1T detector using ^{83m}Kr and light yield determination
 – Supervisors: Sara Diglio and Julien Masbou

EDUCATION

- **Magister degree in Fundamental Physics, specialisation in Astrophysics (M2)** 2022
Université Paris-Saclay Orsay, France
- **Bachelor degree in Physics** 2020
Université de Nantes Nantes, France
- **Bachelor degree in Mathematics** 2020
Université de Nantes Nantes, France

PUBLICATIONS

• Refereed

1. *Can the splashback radius be an observable boundary of galaxy clusters?*
Lebeau, Etori, Aghanim & Sorce, A&A (2024) (**in press**)
2. *Simulating the LOcal Web (SLOW) – II: Properties of local galaxy clusters*
 Hernández-Martínez, Dolag, Seidel, Sorce, Aghanim, Pilipenko, Gottlöber, **Lebeau** & Valentini A&A (2024), (**in press**)
3. *Mass bias in clusters of galaxies: Projection effects on the case study of Virgo replica*
Lebeau, Sorce, Aghanim, Hernández-Martínez & Dolag, A&A 682, A157 (2024)

• Proceedings

1. *Projection effects on pressure profiles: a case study of the Virgo replica*
Lebeau, Sorce & Aghanim, mm Universe Proceedings, EPJ Web of conferences, 2024

TALKS

1. **Turbulence in the ICM of the Virgo cluster simulated replica**
EAS annual meeting
Jul 2024
Padova, Italy
2. **Can the splashback radius be an observable boundary of galaxy clusters ?**
GdR Cophy Episode 2
May 2024
Lyon, France
3. **Can the splashback radius be an observable boundary of galaxy clusters ?**
Tuorla-Tartu meeting
May 2024
Turku, Finland
4. **Gas dynamics in the ICM of galaxy clusters: case study of a Virgo replica**
Elbereth Conference
Mar 2024
Paris, France
5. **Mass bias in clusters of galaxies: case study of Virgo CLONE replica**
RAMSES SNO kick-off meeting
Dec 2023
Lyon, France
6. **Biases in the estimation of the hydrostatic mass of the Virgo simulated CLONE**
mm Universe conference
Jun 2023
Grenoble, France
7. **Biases in the estimation of the hydrostatic mass of the Virgo simulated CLONE**
CLUES meeting
Jun 2023
Munich, Germany
8. **Towards bias-free mass calibration of galaxy clusters using constrained cosmological simulations**
Elbereth Conference
Mar 2023
Paris, France

POSTERS

1. **Turbulence in galaxy clusters and cosmic filaments**
IAS young researchers and ingeneers day
Jun 2024
Orsay, France
2. **Towards bias-free mass calibration of galaxy clusters using constrained cosmological simulations**
Colloque Alain Bouyssy
Dec 2023
Orsay, France
3. **Towards bias-free mass calibration of galaxy clusters using constrained cosmological simulations**
Journée de l'axe Astro de la Graduate School de Physique de l'Université Paris-Saclay
Oct 2023
Orsay, France
4. **Towards bias-free mass calibration of galaxy clusters using constrained cosmological simulations**
IAS young researchers and ingeneers day
Jun 2023
Orsay, France
5. **Towards bias-free mass calibration of galaxy clusters using constrained cosmological simulations**
"Future Cosmology" summer school
Apr 2023
Cargèse, France

SUPERVISION AND TEACHING

- **Co-Supervision of Jade Paste (1st year Master Degree trainee)**
2 months research internship
May-Jun 2024
- **Astronomy pratrical works (15h/year)**
1st year Master Degree
2022-present
- **Electromagnetism courses (21h/year)**
2nd year Bachelor Degree
2023-2024
- **Co-supervision of astronomy projects (one week)**
1 week project with four students of 3rd year Bachelor Degree
2023

MAIN SKILLS

Programming Languages: Analysis of cosmological simulations with ~~Python~~ and Fortran
Languages: English (fluent), French (mother tongue)

CONTRIBUTIONS TO THE COMMUNITY

- Co-organisation of Cosmology team seminars 2024 - present
- Organisation of the IAS young researchers and ingeneers day 2024
- Elected as doctoral student representative on the laboratory board 2024 - present
- Elected as doctoral student representative on the Paris-Saclay University Physics Graduate School board 2023 - present
- Management of the Cosmology team's conference webpage 2022 - 2024

COLLABORATIONS

- Member of the LOCALIZATION project 2022-2025
P.I.s: Nabila Aghanim (IAS, Paris-Saclay University) & Klaus Dolag (LMU, Munich)

GRANTS

- Financial support from doctoral school to participate to "Future Cosmology" summer school (~500€) Apr 2023
- 3-years PhD half-grant from doctoral school 2022 - 2025
"Astronomie & Astrophysique d'Ile-de-France" (~50k€)

PROPOSALS

- Co.I of project Proposal for Tier 0/Tier 1 HPC Access at the Gauss Center for supercomputing 2023
45Mcpu hours obtained on the LRZ supercomputer to run the LOCALIZATION simulation

OUTREACH

- Conference 'Introduction to cosmology' for secondary school students Dec 2023
- Participation to the 'Science Festival 2022' at IAS 2022

PERSONAL INTERESTS

- Basketball in competition level
- Guitar in amateur band