

DR. LOUISE BREUVAL

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CURRENT POSITION

Postdoctoral Fellow

Jan 2022 - present

Johns Hopkins University, Baltimore, MD, USA

Advisor: Adam G. Riess

RESEARCH INTERESTS

Cosmology: the Cepheid distance ladder and the Hubble tension, period-luminosity relations

Stellar physics: metallicity effects, open clusters and applications to distance measurements

Techniques: photometry (HST, JWST), light curve fitting, spectroscopy (metallicity gradients)

EDUCATION

Observatoire de Paris, LESIA, France

Sept 2018 - Oct 2021

PhD in Astronomy

Thesis: The Cepheid distance scale: from the local Gaia calibration to distant galaxies ([link](#))

Advisor: Pierre Kervella

Université Paris Saclay, France

Master's Degree in Astronomy

2018

Bachelor's Degree in Fundamental Physics

2016

PREVIOUS RESEARCH POSITIONS

Master's Degree Internship

Mar 2018 - Jun 2018

Instituto de Astrofísica de Canarias, Tenerife, Spain

Advisors: José A. Pulido and Cristina R. Almeida

Master's Degree Internship

Apr 2017 - July 2017

Observatorio Astronómico Nacional, Santiago, Chile

Advisor: Pierre Kervella

COMPUTATIONAL SKILLS

Operating Systems

MacOS, Windows, UNIX/Linux

Computer Languages

Python, IDL, L^AT_EX

Observation Software

APT (HST, JWST), Aspro2 (VLTI), TUI (APO)

Astronomical Software

DS9, DrizzlePac, DAOPHOT, DOLPHOT

Miscellaneous/Tools

MAST, CDS/VizieR

ACTIVITIES FOR THE COMMUNITY

♦ Referee for ApJ, A&A, MNRAS (4+ papers)

2021 - Present

♦ Organizing Committee of the weekly AstroCoffee Talks, JHU

2022 - Present

♦ Elected Student Representative at the Executive Board of Paris Observatory

2019 - 2021

♦ JWST Cycle 3 Time Allocation Committee Panel Member (Large Scale Structures)

2024

COLLABORATIONS

The SH0ES Collaboration (PI: Adam Riess)

2022 - Present

The Araucaria Project (PI: Grzegorz Pietrzyński & Wolfgang Gieren; [website](#))

2018 - 2022

PUBLICATION SUMMARY

[NASA/ADS Link to All Publications](#)

21 Refereed Publications (5 as first author)

140 Citations (as first author)

HONORS/AWARDS

HST Grant as PI of program GO-17520: \$81,000

May 2024

Awarded by the Space Telescope Science Institute

Nominated Young Scientist

2021 - Present

ISSI Team on the Hubble tension (PI: Gisella Clementini; [website](#))

Prize of the Best Poster

Oct. 2019

Cosmic Controversies Conference, Chicago, IL, USA

OBSERVING TIME AWARDED

HST Cycle 31, GO-17520 (PI) – 33 orbits

2024

A 1% cross-calibration of Cepheids, TRGB, and JAGB in five nearby galaxies with HST

Apache Point Observatory, ARCES (co-I) – 1 half night (PI: S. Li)

2024

Towards a Standardization of the J-region Asymptotic Giant Branch

JWST Cycle 2, GO-4087 (co-I) – 2.9 hours (PI: C. Huang)

2023

Refining the Mira Distance Ladder with NIRCarn Observations of M101

JWST Cycle 2, GO-2875 (co-I) – 16 hours (PI: A. Riess)

2023

Scrutinizing the Dirtiest Cepheids, a Test of the Hubble Tension

HST Cycle 30, GO-17097 (co-I) – 15 orbits (PI: A. Riess)

2022

Reinforcing the Distance Ladder with Cepheids in the Core of the SMC

HST Cycle 30, SNAP-17098 (co-I) – 140 orbits (PI: A. Riess)

2022

HST and Gaia, with Light and Distances, a Foundational Legacy of the Distance Ladder

Apache Point Observatory, ARCES (PI) – 4 half nights (Q2, Q3)

2022

Chemical abundances of Galactic Cepheids to reduce systematics in the distance scale

HST Cycle 29, GO-16676 (co-I) – 10 orbits (PI: A. Riess)

2021

A 1% Calibration of the Distance Ladder from Cepheids Using High Precision Cluster

Parallaxes to Reveal the Origin of the Hubble Tension

JWST Cycle 1, GO-1685 (co-I) – 25.5 hours (PI: A. Riess)

2021

Uncrowding the Cepheids for an Improved Determination of the Hubble Constant

ESO VLTI/PIONIER (co-I) – program 0103.D-0711 (PI: B. Trahin)

2020

IR interferometry to measure angular diameter of Cepheid variables

Cerro Armazones Observatory, Chile (co-I) – 50 nights (PI: Araucaria Project, [link](#))

2020

IR photometry of Milky Way Cepheids and RR Lyrae variables

TEACHING EXPERIENCE

International Spring School, Konkoly Observatory, Budapest, Hungary

◇ *Modern methods of cosmic distance determination*, Lecture

April 2023

Paris Doctoral School in Astrophysics (ED 127), France

◇ *The Expanding Universe*, Invited Lecture

May 2022

Paris Sciences et Lettres University, France

◇ Supervision of a Master Student, Lab Insertion Unit

Sept 2020 - Dec 2020

◇ Optics, 1st year of Physics Degree

Sept 2019 - Jun 2021

◇ Introduction to Astronomy, 1st and 2nd year of Physics Degree

Sept 2019 - Jun 2021

◇ Astronomical observations, practical sessions, 1st year of Physics Degree

Sept 2019 - Jun 2020

TALKS

RRL/Cep Conference – Marrakesh, Morocco (invited)	23 Nov 2024
APS Meeting – Sacramento, CA, USA (invited)	4 Apr 2024
Seminar – Florida State University, online (invited)	11 Oct 2023
MIAPP Workshop – <i>The extragalactic distance scale</i> , Garching, Germany	3 July 2023
AstroCoffee Talk – Johns Hopkins University, Baltimore, MD, USA	1 June 2023
IAU Symposium 376 – Budapest, Hungary	17 Apr 2023
Wine & Cheese Seminar – Johns Hopkins University, Baltimore, MD, USA	27 Mar 2023
AAS Meeting 241 <i>SH0ES Special Session</i> – Seattle, WA, USA	8 Jan 2023
RRL/Cep Conference – La Palma, Spain	26 Sep 2022
Tensions in Cosmology Conference – Corfu Summer Institute, Greece	7 Sep 2022
Hot Science Colloquium – STScI, Baltimore, MD, USA	29 June 2022
Rencontres de Blois <i>Exploring the Dark Universe</i> – Blois, France	25 May 2022
MIAPP Workshop <i>The Hubble Tension</i> – online (invited)	29 Sep 2021
EAS Annual Meeting – online	29 June 2021
Hypatia Colloquium – European Southern Observatory, online	8 June 2021
Gaia EDR3 Day <i>Presentation of Gaia DR2 results</i> – Observatoire de Paris	3 Dec 2020
Seminar – Nuclear and High Energy Physics Laboratory, Paris, France (invited)	28 Sep 2020
Workshop MW-Gaia <i>Frontiers of Stellar Physics</i> – Zagreb, Croatia	21 Jan 2020
Dark Energy Colloquium – Institut Henri Poincaré, Paris, France	20 Nov 2019
RRL/Cep Conference <i>Frontiers of Classical Pulsators</i> – Cloudcroft, NM, USA	18 Oct 2019
Cosmic Controversies Conference – Chicago, IL, USA	8 Oct 2019
Annual Meeting of the SF2A – Nice, France	15 May 2019

OUTREACH

Educational projects with primary schools (Paris, France – 3 projects/yr)	2019 - 2021
Member of the French Association <i>Femmes & Sciences</i> that promotes science to women	2019 - 2022

MEDIA COVERAGE (IN FRENCH)

" <i>La cosmologie en crise ?! Hubble sous tension</i> ", Science Etonnante (YouTube, link)	Feb 2022
" <i>L'expansion qui gonfle les astrophysiciens</i> ", Sciences & Vie Junior (link)	July 2022
" <i>Constante de Hubble: une estimation plus précise grâce à Gaia</i> ", Pour La Science (link)	Jan 2021
" <i>Expansion de l'univers: rien ne va plus !</i> ", Sciences & Vie (link)	Dec 2020

LANGUAGES

French (native), **English** (fluent), **Spanish** (fluent), **German** (intermediate)