Clara Vergès

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Education & Academic appointments

Positions

Lawrence Berkeley National Laboratory **since 2024**
Staff scientist (tenure-track) in the Physics Division

Center for Astrophysics | Harvard & Smithsonian **2020 – 2024**
Harvard Postdoctoral Fellow in the CMB group

Education

Université Paris Cité **2017 – 2020**
PhD in Cosmology
Dissertation: *Searching for cosmological B-modes in the presence of astrophysical contaminants and instrumental effects*, with Radek Stompor and Josquin Errard at AstroParticle and Cosmology laboratory

ISAE-Supaéro & Université Paul Sabatier **2016 – 2017**
Master of Science (M2) – Double degree in Astrophysics and Aerospace Engineering
Master thesis: *Novel readout electronics for CMB experiments*, with Matt Dobbs at McGill University

École polytechnique (X) **2013 – 2016**
Cycle Ingénieur polytechnicien
Senior thesis: *Looking for SZ effect in ALMA data*, with Paola Andreani at European Southern Observatory

Professional service

Collaboration membership

CMB-S4 **since 2021**
Co-coordinator of an analysis working group with 40+ members, Science Council member

BICEP/Keck **since 2020**
Senior member, Calibration & Systematics lead

Community service

Proposal panel review member **since 2025**
National Science Foundation (NSF), National Aeronautics and Space Administration (NASA)

Reviewer **since 2024**
Journal of Cosmology and Astroparticle Physics (JCAP), The Astrophysical Journal (ApJ)

Parity Violation from Home **October 2023, November 2024**
Remote conference – SOC

Fellowships & Awards

KICP fellow (declined) **2024**
University of Chicago

Travel grant (Telescope deployment in Chile) **2019**
Université Paris Cité - Department of Research, Innovation, Valorisation, and Doctoral Studies

Full PhD scholarship **2017-2020**
École Doctorale 560 STEP'UP

Mentoring, Teaching & Outreach

Mentoring

- Harvard University PhD students: Miranda Eiben (since 2024), Annie Polish (since 2022), Brodi Elwood (since 2021), James Cornelison (2020-2023, now MGM Fellow at Argonne National Lab)
- Harvard University undergraduates & interns: Kane Sjöberg (2023 junior thesis), Will Golay (2022 REU intern from the University of Iowa, now graduate student at Harvard University)
- Université Paris Cité undergraduate: Maroua Benhatchi (2019, now graduate student at IJCLab)
- Other: Christos Giannakopoulos, University of Cincinnati graduate student (since 2021)

Teaching

- Qualification for holding entry-level professor positions in France, issued by the French Ministry of Higher Education and Research, based on teaching record and teaching statement (*Qualification aux fonctions de Maître de Conférence, Sections CNU 29 & 34*) – Issued 2021
- Education volunteer for high-school students & young adults from underprivileged background, 2015 – present
- Physics for pre-med students, Computer Science 101 – Université Paris Cité, 2019

Outreach

- UC Berkeley Astro Night speaker, Spring 2025
- CMB-S4 Saturday Space Science Series, 2022 - 2024
- Regular participation in physics and astronomy outreach with *Fête le Savoir* (since 2017, board member 2018-2020) and *Universciel* (2018-2020)

Selected publications

[1] The BICEP/Keck Collaboration. "BICEP/Keck XVIII: Measurement of BICEP3 polarization angles and consequences for constraining cosmic birefringence and inflation". In: *Phys. Rev. D* 111.6, 063505 (Mar. 2025), p. 063505. DOI: 10.1103/PhysRevD.111.063505.

[2] C. Giannakopoulos, C. Vergès, and the BICEP/Keck collaboration. "Calibration measurements of the BICEP3 and BICEP array CMB polarimeters from 2017 to 2024". In: *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XII*. Vol. PC13102. SPIE, 2024, PC1310219. DOI: 10.1117/12.3020443.

[3] J. Cornelison, C. Vergès, and the BICEP/Keck collaboration. "Improved polarization calibration of the BICEP3 CMB polarimeter at the South Pole". In: *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*. Vol. 12190. SPIE, 2022, p. 121901X. DOI: 10.1117/12.2620212.

[4] The BICEP/Keck Collaboration. "BICEP/Keck XIII: Improved Constraints on Primordial Gravitational Waves using Planck, WMAP, and BICEP/Keck Observations through the 2018 Observing Season". In: *Phys. Rev. Letters* 127.15, 151301 (Oct. 2021), p. 151301. DOI: 10.1103/PhysRevLett.127.151301.

[5] C. Vergès, J. Errard, and R. Stompor. "Framework for analysis of next generation, polarized CMB data sets in the presence of Galactic foregrounds and systematic effects". In: *Phys. Rev. D* 103 (6 Mar. 2021), p. 063507. DOI: 10.1103/PhysRevD.103.063507.

Complete list: arXiv - ADS - Google Scholar

Talks & Seminars

Seminars

- *Constraining cosmic birefringence with BICEP3* – RG Division Flash Talks, Center for Astrophysics, October 2024
- *A new era for cosmology with current and next-generation CMB experiments* – LBNL Physics Division Research Progress Meeting, Lawrence Berkeley National Laboratory, February 2024
- *Cosmology with BICEP/Keck: From inflation to cosmic birefringence* – KICP seminar, February 2024
- *Cosmology with BICEP/Keck: From inflation to cosmic birefringence* – AstroParticle and Cosmology Laboratory (APC), December 2023
- *A window on the Universe with the next generation of millimeter-wave telescopes* – UCR Physics Seminar, University of California Riverside, March 2023
- *A new era for cosmology with current and next-generation CMB experiments* – Submillimeter Array (SMA) Science Seminar, March 2023
- *A window on the Universe with the next generation of millimeter-wave telescopes* – LBNL Physics Division Research Progress Meeting, Lawrence Berkeley National Laboratory, February 2023
- *Updated Constraints on Primordial Gravitational Waves using Planck, WMAP, and BICEP/Keck Observations through the 2018 Observing Season* – CfA Seminar, April 2022
- *Probing Universe's first light: Looking for inflation with the new generation of CMB polarisation experiments* – ESO Lunch Talk, June 2020

Invited talks

- *Beam Systematics in BICEP/Keck* – Beam Mode workshop, Stockholm University, September 2023
- *New Constraints on Primordial Gravitational Waves using Planck, WMAP, and BICEP/Keck Observations through the 2018 Observing Season* – CMB France Workshop, November 2021
- *Impact of instrumental systematic effects on component separation and large scale B-modes measurements* – CMB Calibration and systematics focus workshop, Kavli IPMU, December 2020

Contributed talks

- *Constraining isotropic polarisation rotation with BICEP3*, CMB-S4 Collaboration Meeting, July 2023
- *Beam calibration campaign requirements to control temperature-to-polarisation leakage for CMB-S4* – From Planck to the future of the CMB, INFN Ferrara, May 2022
- *A framework for performance forecasting of the parametric component separation in the presence of systematic effects* – B-modes from Space workshop, MPA, December 2019
- *Instrumental systematic effects for the new generation of CMB polarisation experiments* – Young French Physicists annual meeting, organised by the French Physics Society (SFP), November 2018

Posters

- *Improved RPS calibration for the BICEP3 telescope* (Kane Sjöberg) – AAS Winter Meeting, January 2024
- *New Algorithms for Characterizing the Beams of Next-Generation CMB Experiments* (Will Golay) – AAS Winter Meeting, January 2023
- *Control of beam systematics and temperature-to-polarisation leakage: From BICEP/Keck demonstrated performance to forecasts for CMB-S4* – Rencontres de Moriond, January 2022
- *Latest results, current data-analysis and upcoming upgrades of the POLARBEAR experiment* – CosmoGold IAP 2019 : The golden age of cosmology from Planck to Euclid, June 2019

References

John M. Kovac
Professor of Astronomy and of Physics, Harvard University
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Radek Stompor
Senior Researcher, AstroParticle & Cosmology laboratory, CNRS (France)
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Kirit S. Karkare
Assistant Professor, Boston University
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Additional references available upon request