

# Anik Halder

(he/him/his)

Madingley Road  
Cambridge CB3 0HA, UK  
✉ ah2425@cam.ac.uk  
Citizenship: Indian

## Education

- Feb 2024 **PhD Physics**, (*magna cum laude*) Ludwig-Maximilians-Universität München, Germany.  
March 2020 **MSc Astrophysics**, (*distinction*) Ludwig-Maximilians-Universität München, Germany.  
June 2017 **BSc Physics**, (*distinction*) Jacobs University Bremen, Germany.  
May 2014 **High school graduation (AISSCE)**, Hem Sheela Model School, Durgapur, India.

## Employment

### University of Cambridge, United Kingdom

- Nov 2024 - **Research Associate**, *Institute of Astronomy & Kavli Institute for Cosmology, Cambridge*.  
present
  - Conducting research projects in gravitational lensing and galaxy formation and evolution.
  - IoA Colloquium and KICC CMB-LSS seminar organiser.
  - Postdoctoral Associate at *Jesus College, Cambridge* contributing to academic and college events.

Ludwig-Maximilians-Universität München, Germany

Jan 2019 - **Teaching and Research Assistant**, *University Observatory Munich & Max Planck Institute for Extraterrestrial Physics Garching*.

Dec 2023
  - Conducting research projects in weak gravitational lensing cosmology.
  - Supervision of student projects, labs and courses.
  - Extragalactic Astronomy research group seminar organiser.

Heinz Maier-Leibnitz Research Centre, Garching, Germany

Nov 2017 - **Software Developer**, *Scientific Computing group*.

Dec 2018
  - Developer of the small-angle x-ray scattering software *BornAgain*.

## Internships

### Instituto de Astrofísica de Canarias, Tenerife, Spain

- June 2017 - **DAAD RISE Weltweit Scholar 2017**.
- Aug 2017
  - Quantifying the demographics of Boxy/Peanut structures in edge-on galaxies in the local Universe.
- University of St Andrews, United Kingdom
- June 2016 - **DAAD RISE Weltweit Scholar 2016**.
- Aug 2016
  - Analysis and validation of realistic synthetic observations of star-forming clouds.
- Fraunhofer Institute for Laser Technology, Aachen, Germany
- July 2015 - **Department of Lasers and optics**.
- Aug 2015
  - Model validation of thermal surface deformation of optical lenses due to laser beams.

## Awards

- Dec 2022 Awarded the Early Career Scientist Travel Grant from the *Dark Energy Survey (DES)* to attend collaboration-wide meeting. Also invited to present research in the Special Session on New Results from DES at the 241st American Astronomical Society Meeting, Seattle, USA.
- Mar 2022 Awarded a grant from the *DAAD RISE Germany* programme to host an international undergraduate student for a summer research internship.

- Jun 2017 Placed on the President's List of Jacobs University Bremen in recognition of academic performance during undergraduate study.
- 2016–2017 Awarded the **DAAD RISE Weltweit Scholarships** in two consecutive years for conducting research projects in the natural sciences at institutions outside Germany.
- 2014–2017 Awarded a merit-based scholarship for undergraduate studies at Jacobs University Bremen, Germany.
- Jun 2014 Awarded the INSPIRE Scholarship for Higher Education (ranked in the top 1% nationally in the All India Senior Secondary Examination, India); *declined in favour of pursuing undergraduate studies in Germany*.
- Sep 2013 Runner-up in the 21st Prof. Brahm Prakash Memorial Materials Essay and Elocution Competition, Indian Institute of Metals Kalpakkam, among 6 finalists from all over India.

## Teaching experience

- Oct 2019 - Tutor, grader, and acting lecturer at LMU Munich for BSc Physics and MSc Astrophysics courses. Designed and introduced the *Weak Gravitational Lensing* MSc Astrophysics lab.
- Sep 2015 - Tutor and grader at Jacobs University Bremen for BSc Physics courses: *Classical Physics*, June 2017 *Modern Physics, Statistical Physics, Renewable Energy*.

## Mentoring experience

- April 2023 - **David Gebauer** (currently graduate student at the University of Bielefeld) co-supervision of present master's and PhD projects.
- June 2022 - **Yue Pan** (currently graduate student at Princeton University), **DAAD RISE Germany** summer Aug 2022 intern at LMU Munich.
- April 2020 - **Zhengyangguang Gong** (currently postdoctoral researcher at the University of Arizona), July 2025 co-supervision of master's and PhD projects.

## Voluntary service

- Reviewer** JCAP (Journal), DES (Collaboration), LSST DESC (Collaboration)  
**Social work** Royal Voluntary Service (Cafe retailer)

## Skills

- Languages** Bengali (native), English (bilingual), German (intermediate), Hindi (intermediate).  
**Computing** c, c++, python, high-performance computing

## References

- Dr. Oliver Friedrich, LMU Munich, Email: [Oliver.Friedrich@physik.uni-muenchen.de](mailto:Oliver.Friedrich@physik.uni-muenchen.de)  
Prof. Hiranya Peiris, University of Cambridge, Email: [hiranya.peiris@ast.cam.ac.uk](mailto:hiranya.peiris@ast.cam.ac.uk)  
Prof. Cora Uhlemann, University of Bielefeld, Email: [cuhlemann@physik.uni-bielefeld.de](mailto:cuhlemann@physik.uni-bielefeld.de)

## Publications

Selected publications with major contributions. A full publication list, including other collaborative works, is available on my [Google Scholar](#) page.

- D. Gebauer, A. **Halder**, S. Seitz, and D. Anbjagane, "SBi3PCF: Simulation-based inference with the integrated 3PCF," *arXiv e-prints* (Oct., 2025) arXiv:2510.13805, arXiv:2510.13805 [astro-ph.CO].
- L. Lucie-Smith, H. V. Peiris, A. Pontzen, A. **Halder**, J. Schaye, M. Schaller, J. Helly, R. J. McGibbon, and W. Elbers, "Cosmological feedback from a halo assembly perspective," *Phys. Rev. D* **112** no. 6, (Sept., 2025) 063541, arXiv:2505.18258 [astro-ph.CO].
- J. Harnois-Déraps and the LSST Dark Energy Science Collaboration (incl. A. **Halder**), "Non-linear infusion of intrinsic alignment and source clustering: impact on non-Gaussian cosmic shear statistics," *arXiv e-prints* (Sept., 2025) arXiv:2509.25166, arXiv:2509.25166 [astro-ph.CO].
- O. Friedrich, L. Castiblanco, A. **Halder**, and C. Uhlemann, "Bye binormal: analysing the joint PDF of galaxy density and weak lensing convergence," (*Accepted in MNRAS*); *arXiv e-prints* (July, 2025) arXiv:2507.16957, arXiv:2507.16957 [astro-ph.CO].
- Z. Gong, A. **Halder**, A. Bohrdt, S. Seitz, and D. Gebauer, "C3NN: Cosmological Correlator Convolutional Neural Network an Interpretable Machine-learning Framework for Cosmological Analyses," *ApJ* **971** no. 2, (Aug., 2024) 156, arXiv:2402.09526 [astro-ph.CO].
- A. Barthelemy, A. **Halder**, Z. Gong, and C. Uhlemann, "Making the leap. Part I. Modelling the reconstructed lensing convergence PDF from cosmic shear with survey masks and systematics," *J. Cosmology Astropart. Phys.* **03** (Mar., 2024) 060, arXiv:2307.09468.
- A. **Halder**, Z. Gong, A. Barreira, O. Friedrich, S. Seitz, and D. Gruen, "Beyond  $3 \times 2$ -point cosmology: the integrated shear and galaxy 3-point correlation functions," *J. Cosmology Astropart. Phys.* **2023** no. 10, (Oct, 2023) 028, arXiv:2305.17132.
- Z. Gong, A. **Halder**, A. Barreira, S. Seitz, and O. Friedrich, "Cosmology from the integrated shear 3-point correlation function: simulated likelihood analyses with machine-learning emulators," *J. Cosmology Astropart. Phys.* **2023** no. 7, (July, 2023) 040, arXiv:2304.01187.
- A. **Halder** and A. Barreira, "Response approach to the integrated shear 3-point correlation function: the impact of baryonic effects on small scales," *MNRAS* **515** no. 3, (Sept., 2022) 4639–4654, arXiv:2201.05607.
- O. Friedrich, A. **Halder**, A. Boyle, C. Uhlemann, D. Britt, S. Codis, D. Gruen, and C. Hahn, "The PDF perspective on the tracer-matter connection: Lagrangian bias and non-Poissonian shot noise," *MNRAS* **510** no. 4, (Mar., 2022) 5069–5087, arXiv:2107.02300.
- A. **Halder**, O. Friedrich, S. Seitz, and T. N. Varga, "The integrated three-point correlation function of cosmic shear," *MNRAS* **506** no. 2, (Sept., 2021) 2780–2803, arXiv:2102.10177.
- R. Marco Figuera, B. Pham Huu, A. P. Rossi, M. Minin, J. Flahaut, and A. **Halder**, "Online characterization of planetary surfaces: PlanetServer, an open-source analysis and visualization tool," *Planet. Space Sci.* **150** (Jan., 2018) 141–156.