Dr. Manuel Meyer | Curriculum vitæ

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- Languages: German (native), English (fluent), Swedish (proficient), French (basic), Spanish (basic)
- Identifiers: ORCID:0000-0002-0738-7581, INSPIRE HEP: Manuel.Meyer.1, Scopus Researcher ID: 55463373300, Google Scholar

Research Interests

My interests lie in the field of astroparticle physics and experimental searches for dark matter, in particular in the form of axions and axion-like particles. My research has provided stringent limits on the coupling between photons and axion-like particles using astrophysical observations. I also currently participate in the characterization and commissioning of the transition edge sensor to be used in the ALPS II experiment and lead the development of machine-learning-based data analysis.

Experience

Since 2023 **Associate Professor for Experimental Physics** Odense, Denmark
- Center for Cosmology and Particle Physics Phenomenology (CP3), University of Southern Denmark

2021-2022 **Research group leader** Hamburg, Germany
- Institute for Experimental Physics, University of Hamburg
- Parental leave: July 2021, March-July 2022

2019 - 2021 ***Marie Skłodowska-Curie* Research Fellow** Erlangen, Germany
- Erlangen Center for Astroparticle Physics, University Erlangen-Nuremberg. PI: Prof. Stefan Funk

2019 ***Feodor Lynen* Research Return Fellow** Hamburg, Germany
- Deutsches Elektron Synchrotron (DESY). PI: Dr. Axel Lindner

2017 - 2019 ***Feodor Lynen* Research Fellow** Stanford, CA, USA
- Kavli Institute for Particle Astrophysics and Cosmology, Stanford University. PI: Prof. Roger Blandford

2013 - 2016 **Post doctoral researcher** Stockholm, Sweden
- Oskar Klein Centre for Cosmoparticle Physics, Stockholm University. PI: Prof. Jan Conrad

Education

2010 - 2013 **Ph.D., Physics, University of Hamburg** Hamburg, Germany
- Ph.D. thesis: The opacity of the Universe for high and very high energy γ-rays. *Grade: "Magna Cum Laude" – with Honors*
- Advisor: Prof. Dieter Horns

2004 - 2010 **Diploma in Physics, University of Hamburg** Hamburg, Germany
- Diploma thesis: Spectral Modeling of the Crab Nebula and Search for oscillatory features in X-ray data induced by hidden Photons. *Grade: "Excellent, with Honors"*
- Advisor: Prof. Dieter Horns

Selected Grants

2021 **DFG Research Unit "Relativistic Jets in Active Galaxies"** Bonn, Germany

- Associated member of a research group funded by the German Research Foundation (DFG).
- Amount of funding: 3,600,000€

2020 **ERC Starting Grant** Brussels, Belgium

- Research grant for early career scientists awarded by European Research Council (ERC).
- Amount of funding: 1,441,000€

2019 ***Marie Skłodowska-Curie* Research Fellowship** Brussels, Belgium

- Marie Skłodowska-Curie Actions Research Fellowship awarded by the ERC.
- Amount of funding: 175,000€

2016 ***Feodor Lynen* Research Fellowship** Bonn, Germany

- Sponsorship for own research position from the German Humboldt Foundation.
- Amount of funding: 126,000€

Awards

2017 **Marie Skłodowska-Curie Actions Seal of Excellence** Brussels, Belgium

- Award for proposal submitted under the Horizon 2020 Marie Skłodowska-Curie actions

2010 ***Otto Stern* Prize** Hamburg, Germany

- Prize for best diploma thesis in physics of the 2010 summer term at the University of Hamburg

Collaboration Memberships

since 2021 **Any Light Particle Search (ALPS) Collaboration**

- Leading the machine-learning-based data analysis development for the TES detector; member of the executive board

since 2021 **International Axion Observatory (IAXO) Collaboration**

- Member of the collaboration board

since 2013 ***Fermi* Gamma Ray Space Telescope Collaboration**

- Former coordinator of the dark matter and new physics working group

since 2012 **Cherenkov Telescope Array (CTA) Consortium**

- Convener of the Dark Matter and Exotic Physics working group

since 2012 **High Energy Stereoscopic System (H.E.S.S.) Collaboration**

- Member of the multi-wavelength board, former deputy convener of the astroparticle working group

Selected Corresponding Author Publications

35 publications in peer-reviewed journals with major contribution (14 as corresponding author). Co-author of more than 50 publications of the H.E.S.S. collaboration, 14 publications of the *Fermi*-LAT collaboration, 26 conference proceedings, and 5 white papers. According to NASA ADS, the publications have in total more than 8900 citations with an h index of 44. A publication list including all collaboration papers can be found on ORCID.

1. J. Biteau and M. **Meyer**, *Gamma-Ray Cosmology and Tests of Fundamental Physics*, Galaxies, Vol. 10, No. 2, p. 39, 2022, arXiv: 2202.00523 [astro-ph.CO]

2. H. Abdalla et al. (CTA Consortium including **M. Meyer**), *Sensitivity of the Cherenkov Telescope Array for probing cosmology and fundamental physics with gamma-ray propagation*, JCAP, Vol. 2021, No. 2, 048, p. 048, 2021, arXiv: 2010.01349 [astro-ph.HE]

3. M. **Meyer** and T. Petrushevska, *Search for Axionlike-Particle-Induced Prompt γ-Ray Emission from Extragalactic Core-Collapse Supernovae with the Fermi Large Area Telescope*, Phys. Rev. Lett. Vol. 124, No. 23, 231101,

p. 231101, 2020, arXiv: 2006.06722 [astro-ph.HE]

4. M. **Meyer**, J. D. Scargle, and R. D. Blandford, *Characterizing the gamma-ray variability of the brightest flat spectrum radio quasars observed with the Fermi LAT*, ApJ, Vol. 877, No. 1, 39, p. 39, 2019, arXiv: 1902.02291 [astro-ph.HE].

5. M. **Meyer**, M. Giannotti, A. Mirizzi, M. Sánchez-Conde, and J. Conrad, *The Fermi Large Area Telescope as a Galactic Supernovae Axionscope*, Phys. Rev. Lett. Vol. 118, No. 1, p. 011103, 2017, arXiv: 1609.02350 [astro-ph.HE].

Conference Contributions

Contributed to more than 25 conferences, workshops, and seminars (17 invited).

Selected Invited Presentations

2023	Cosmic magnetism in voids and filaments Conference	Italy
2022	28th Epiphany Conference on Recent Advances in Astroparticle Physics	Poland
2021	Virtual Spring meeting of the German Physical Society	Germany
2020	Virtual Kashiwa Dark Matter Symposium 2020	Japan
2019	15th Patras Workshop on Axions, WIMPs, and WISPs	Germany

Selected Contributed Presentations

2022	7th Heidelberg International Symposium on High-Energy Gamma-Ray Astronomy	Spain
2019	1st CTA Symposium	Italy
2018	8th International *Fermi* Symposium	USA
2018	TeV Particle Astrophysics 2018	Germany
2017	TeV Particle Astrophysics 2017	USA

Supervision & Mentoring

2020-2023	Co-supervisor of Milena Crnogorčević PhD thesis	University of Maryland, USA
2023	Supervisor of Malte Thoms' Bachelor thesis	Hamburg, Germany
2023	Supervisor of Till Moritz' Bachelor thesis	Hamburg, Germany
2022	Supervisor of Jan Wiesenmüller's Bachelor thesis	Hamburg, Germany
2022	Supervisor of Emre Toka's Bachelor thesis	Hamburg, Germany
2022	Supervisor of Yosef Abed's Bachelor thesis	Hamburg, Germany
since 2022	Supervisor of Sara Porras' PhD thesis	Hamburg, Germany
since 2021	Mentor in the *Fermi*-LAT Mentoring Program (see here for details)	
since 2021	Supervisor of Rahul Cecil's PhD thesis	Hamburg, Germany
since 2021	Co-supervisor of Julian Kuhlmann's masters thesis	Hamburg, Germany
since 2020	Supervisor of Phillip Beck's masters thesis	Erlangen, Germany
since 2020	Co-supervisor of James Davies' PhD thesis	Oxford, UK
since 2020	Co-supervisor of Anke Yusafzai's PhD thesis	Erlangen, Germany
2019	Co-supervisor of Milena Crnogorčević masters thesis	University of Maryland, USA
2017	Supervisor of Nickolas Kokron's research project during his PhD rotation	Stanford, CA, USA
2015	Supervisor of Axel Erbing's bachelors thesis	Stockholm, Sweden

Teaching and Formal Training in Teaching

Courses and Classes taught

2021 - 2022 **Particle and Astroparticle Physics** Hamburg, Germany

- Seminars prepared by students in winter term 2021/2022.

2020 - 2022 **Gamma-ray Telescope in the Classroom** Erlangen, Germany

- Lectures, exercise classes, and observation nights for bachelors and masters students in winter term 2020/2021.

2019 - 2020 **Data Analysis II and Introduction to Machine Learning** Erlangen, Germany

- Lectures and exercise classes given for masters students in winter term 2019/2020.

2018 **Lectures for pre-collegiate students** Stanford, CA, USA

- Lectures given for high school students during particle physics and cosmology summer courses.

2011-2012 **Lab assistant for undergraduate physics students** Hamburg, Germany

- Supervision of small groups of students for week-long labs. Included teaching, supervision, feedback and grading.

Training

2018 **Stanford Scientific Teaching Summer Institute** Stanford, CA, USA

- Three day workshop on science-based teaching, inclusion, and equity.

2017 **Introduction to Undergraduate STEM Teaching** Stanford, CA, USA

- Online course offered by the Center for the Integration of Research Teaching and Learning, stemteachingcourse.org. Passed with distinction.

Outreach

2022	Interview on how to obtain research funding	Hamburg, Germany
2022	Article about own research funded by European Union	Hamburg, Germany
2021	Newspaper article about own research (in German)	Hamburg, Germany
2020	Online presentation for members of the Nuremberg Observatory Association	Nuremberg, Germany
2020	Contribution to University press release about own research published on official University website (in German and English)	Erlangen, Germany
2019	Presentation at the "Silicon Valley Nerd Nite" public outreach series	San Jose, CA, USA
2018	Contribution to SLAC News article about own research	Menlo Park, CA, USA
2018	Presentation at the "Astronomy on tap" public outreach series	San Francisco, CA, USA
2016	Contribution to NASA News article about own research	Greenbelt, Md., USA
2016	Contribution to news article and Blog post about own research	Stockholm, Sweden
2015	Public lecture (in Swedish) at the Ericsson's astronomy club	Stockholm, Sweden
2009-2010	Advisor for high school students at the DESY school labs	Hamburg, Germany

Computer skills

- Operating systems: Mac OS, Ubuntu, Windows
- Programming languages: python, Root, C++, C

Scientific Computing:	numpy, scipy, astropy, scikit-learn, iminuit, emcee, tensorflow & keras, matplotlib, hdf5, pandas, git
Developed Software:	gammaALPs, ebltable
Data analysis	*Fermi*-LAT (FERMIPY and *Fermi Tools*); H.E.S.S. and CTA (HAP and GAMMAPY); *Swift* XRT, NuSTAR, and XMM-Newton (pipelines and XSPEC); ALMA (CASA), ALPS II (TES)
Document preparation	LaTeX, Keynote, OpenOffice, Microsoft Office

Reviewing

Member of scientific organizing committees	Phystat gamma conference, International Cosmic Ray Conference (ICRC) 2021; "Recontres du Vietnam: Very High Energy Phenomena in the Universe" 2018 conference; "The puzzle of dark matter 2018" conference
Journal reviewer	Physical Review Letters, Physical Review D, Astrophysical Journal (ApJ), the Journal of Cosmology and Astroparticle Physics (JCAP), Physics Letters B, Monthly Notes of the Royal Astronomical Society (MNRAS), European Physical Journal C