Dr. Manuel Meyer | Curriculum vitæ

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Positions

Research group leader — **Planned for June 2021**
Institute for Experimental Physics, University of Hamburg — *Hamburg, Germany*

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

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

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

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

Education

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

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

Research interests

My interests lie in the field of astroparticle physics as well as 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 am also leading the research and development efforts for a machine-learning-based data analysis of the transition edge sensor of the ALPS II experiment.

Selected Grants

ERC Starting Grant — **July 2020**
Research grant for early career scientists awarded by European Research Council — *Brussels, Belgium*
Amount of funding: 1,441,000€

***Marie Skłodowska-Curie* Research Fellowship** — **February 2019**
Marie Skłodowska-Curie Actions Research Fellowship awarded by European Commission. — *Brussels, Belgium*
Amount of funding: 175,000€

Fermi Guest Investigator Program Cycle 11 — **August 2018**
Project grant awarded by NASA. Received as principal investigator.
Amount of funding: $23,000

***Feodor Lynen* Research Fellowship** — **October 2016**
Sponsorship for own research position from the German Humboldt Foundation. — *Bonn, Germany*
Amount of funding: approximately 126,000€

Awards

Marie Skłodowska-Curie Actions Seal of Excellence **April 2017**
Award for proposal submitted under the Horizon 2020 Marie Skłodowska-Curie actions *Brussels, Belgium*

***Otto Stern* Prize for best diploma thesis** **December 2010**
Best diploma thesis in physics of the 2010 summer term, University of Hamburg *Hamburg, Germany*

Collaboration Memberships

Any Light Particle Search (ALPS) Collaboration **2019 – present**
Member, leading the machine-learning-based data analysis development

***Fermi* Gamma Ray Space Telescope Collaboration** **2013 – present**
Member, former coordinator of the dark matter and new physics working group

Cherenkov Telescope Array (CTA) Consortium **2012 – present**
Convener of the Dark Matter and Exotic Physics working group

High Energy Stereoscopic System (H.E.S.S.) Collaboration **2012 – present**
Member of the multi-wavelength board, former deputy convener of the astroparticle working group

Papers and Conference Presentations

28 publications in peer-reviewed journals with major contribution and 1 manuscript submitted for publication (14 as corresponding author). Co-author of more than 50 publications of the H.E.S.S. collaboration, 11 publications of the *Fermi*-LAT collaboration, 23 conference proceedings, and 4 white papers. According to NASA ADS, the publications have in total more than 5300 citations with an h index of 33. A publication list including all collaboration papers can be found on ORCID. Contributed to 25 conferences, workshops, and seminars (16 invited).

Selected Corresponding Author Publications

1. 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*, Accepted by JCAP 2020, arXiv: 2010.01349 [astro-ph.HE]
2. **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]
3. E. Armengaud et al. (including **M. Meyer**), *Physics potential of the International Axion Observatory (IAXO)*, JCAP, Vol. 2019, No. 6, 047, p. 047, 2019, arXiv: 1904.09155 [hep-ph].
4. **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].
5. M. Ajello et al. (*Fermi*-LAT Collaboration, including **M. Meyer**), *Search for Spectral Irregularities due to Photon-Axionlike-Particle Oscillations with the Fermi Large Area Telescope*, Phys. Rev. Lett. (Editor's suggestion), Vol. 116, No. 16, 161101 2016, arXiv: 1603.06978 [astro-ph.HE].

Selected Invited Conference Presentations

Kashiwa Dark Matter Symposium 2020 **November 2020**
Virtual symposium due to Corona pandemic *Kashiwa, Japan*

Spring meeting of the German Physical Society **March 2020**
Cancelled due to Corona pandemic *Bonn, Germany*

15th Patras Workshop on Axions, WIMPs, and WISPs **June 2019**
Freiburg, Germany

7th International *Fermi* Symposium **October 2017**
Garmisch-Partenkirchen, Germany

224th Meeting of the American Astrophysical Society **June 2014**
Boston, MA, USA

Selected Contributed Conference Presentations

1st CTA Symposium **May 2019**
Bologna, Italy

8th International *Fermi* Symposium **October 2018**
Baltimore, MD, USA

TeV Particle Astrophysics 2018 **August 2018**
Berlin, Germany

TeV Particle Astrophysics 2017 **August 2017**
Columbus, OH, USA

Dark Matter at LHC workshop **April 2017**
Irvine, CA, USA

Supervision

Supervisor of Phillip Beck's masters thesis **2020 – present**
Friedrich Alexander University Erlangen-Nuremberg *Erlangen, Germany*

Co-supervisor of James Davies' PhD thesis **2020 – present**
Oxford University *Oxford, UK*

Co-supervisor of Anke Yusafzai's PhD thesis **2020 – present**
Friedrich Alexander University Erlangen-Nuremberg *Erlangen, Germany*

Co-supervisor of Tim Unbehaun's masters thesis **2020 – present**
Friedrich Alexander University Erlangen-Nuremberg *Erlangen, Germany*

Co-supervisor of Milena Crnogorcevic's masters and PhD theses **2018 – present**
University of Maryland *Maryland, USA*

Supervisor of Nickolas Kokron's research project during his PhD rotation **2017**
Stanford University *Stanford, CA, USA*

Supervisor of Axel Erbing's bachelors thesis **2015**
Stockholm University *Stockholm, Sweden*

Teaching and Formal Training in Teaching

Courses and Classes taught

Gamma-ray Telescope in the Classroom **2020 – 2021**
Friedrich Alexander University Erlangen-Nuremberg *Erlangen, Germany*
Lectures, exercise classes, and observation nights for bachelors and masters students in winter term 2020/2021.

Data Analysis II and Introduction to Machine Learning **2019 – 2020**
Friedrich Alexander University Erlangen-Nuremberg *Erlangen, Germany*
Lectures and exercise classes given for masters students in winter term 2019/2020.

Lectures for pre-collegiate students **July 2018**
Stanford University *Stanford, CA, USA*
Lectures given for high school students during particle physics and cosmology summer courses.

Lab assistant for undergraduate physics students **2011 – 2012**
University of Hamburg *Hamburg, Germany*
Supervision of small groups of students for week-long labs. Included teaching, supervision, feedback and grading.

Tutor for undergraduate physics students **2007 – 2009**
University of Hamburg *Hamburg, Germany*

Training

Stanford Scientific Teaching Summer Institute **August 2018**
Stanford University *Stanford, CA, USA*
Three day workshop on science-based teaching, inclusion, and equity.

Course "An Introduction to Evidence-Based Undergraduate STEM Teaching" **Fall 2017**
Stanford University *Stanford, CA, USA*
Online course offered by the Center for the Integration of Research Teaching and Learning, stemteachingcourse.org.
Passed with distinction.

Outreach

Public presentation at the Nuremberg Observatory **December 2020**
Online presentation for members of the Nuremberg Observatory Association *Nuremberg, Germany*

Contribution to University press release about own research **June 2020**
Published on official University website (in German and English) *Erlangen, Germany*

Public presentation "Supermassive black holes as particle accelerators" **January 2019**
Given at the "Silicon Valley Nerd Nite" public outreach series *San Jose, CA, USA*

Contribution to SLAC News article about own research **October 2018**
Published on official SLAC website *Menlo Park, CA, USA*

Public presentation "Shining light through walls with dark matter" **February 2018**
Given at the "Astronomy on tap" public outreach series *San Francisco, CA, USA*

Contribution to NASA News article about own research **August 2016**
Published on official NASA website *Greenbelt, Md., USA*

News article and Blog post about own research **April 2016**
Published on the websites of Stockholm University *Stockholm, Sweden*

Public lecture "Jakten på den mörka materian med ljus" (in Swedish) **November 2015**
Given at the Ericsson's astronomy club *Stockholm, Sweden*

Advisor for high school students in the DESY school labs **2009 – 2010**
DESY Hamburg *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, matplotlib, hdf5, pandas, git

Data analysis: *Fermi*-LAT (FERMIPY and *Fermi Tools*); H.E.S.S.; CTA (CTOOLS 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: "Recontres du Vietnam: Very High Energy Phenomena in the Universe" 2018 conference; "The puzzle of dark matter 2018" conference; International Cosmic Ray Conference (ICRC) 2021

Proposal reviewer: NASA Fermi Guest Investigator Program Cycle 10, NASA's Astrophysics Theory Program (ATP13)

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