

Dr. Manuel Meyer | Curriculum vitæ

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Positions

Research group leader <i>Institute for Experimental Physics, University of Hamburg</i>	Planned for June 2021 <i>Hamburg, Germany</i>
Marie Skłodowska-Curie Research Fellow <i>Erlangen Center for Astroparticle Physics, University Erlangen-Nuremberg</i> PI: Prof. Stefan Funk	October 2019 – May 2021 <i>Erlangen, Germany</i>
Feodor Lynen Research Return Fellow <i>Deutsches Elektron Synchrotron (DESY)</i> PI: Dr. Axel Lindner	June 2019 – October 2019 <i>Hamburg, Germany</i>
Feodor Lynen Research Fellow <i>Kavli Institute for Particle Astrophysics and Cosmology, Stanford University</i> PI: Prof. Roger Blandford	February 2017 – April 2019 <i>Stanford, USA</i>
Post doctoral researcher <i>Oskar Klein Centre for Cosmoparticle Physics, Stockholm University</i> PI: Prof. Jan Conrad	September 2013 – December 2016 <i>Stockholm, Sweden</i>

Education

Ph.D., Physics <i>Grade: “Magna Cum Laude” – with Honors, University of Hamburg</i> Ph.D. thesis title: “The opacity of the Universe for high and very high energy γ -rays”. Advisor: Prof. Dieter Horns	July 2010 – July 2013 <i>Hamburg, Germany</i>
Diploma, Physics <i>Grade: “Excellent, with Honors”, University of Hamburg</i> 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	October 2004 – June 2010 <i>Hamburg, Germany</i>

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.

Selected Grants

ERC Starting Grant <i>Research grant for early career scientists awarded by European Research Council</i> Amount of funding: 1,441,000€	July 2020 <i>Brussels, Belgium</i>
Marie Skłodowska-Curie Research Fellowship <i>Marie Skłodowska-Curie Actions Research Fellowship awarded by European Commission.</i> Amount of funding: 175,000€	February 2019 <i>Brussels, Belgium</i>
Fermi Guest Investigator Program Cycle 11 <i>Project grant awarded by NASA. Received as principal investigator.</i> Amount of funding: \$23,000	August 2018
Feodor Lynen Research Fellowship <i>Sponsorship for own research position from the German Humboldt Foundation.</i> Amount of funding: approximately 126,000€	October 2016 <i>Bonn, Germany</i>

Awards

Marie Skłodowska-Curie Actions Seal of Excellence	April 2017
<i>Award for proposal submitted under the Horizon 2020 Marie Skłodowska-Curie actions</i>	<i>Brussels, Belgium</i>
Otto Stern Prize for best diploma thesis	December 2010
<i>Best diploma thesis in physics of the 2010 summer term, University of Hamburg</i>	<i>Hamburg, Germany</i>

Collaboration Memberships

Fermi Gamma Ray Space Telescope Collaboration	2013 – present
<i>Member, former coordinator of the dark matter and new physics working group</i>	
Cherenkov Telescope Array (CTA) Consortium	2012 – present
<i>Convener of the Dark Matter and Exotic Physics working group</i>	
High Energy Stereoscopic System (H.E.S.S.) Collaboration	2012 – present
<i>Member of the multi-wavelength board, former deputy convener of the astroparticle working group</i>	

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 2021](#), 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
<i>Virtual symposium due to Corona pandemic</i>	<i>Kashiwa, Japan</i>
Spring meeting of the German Physical Society	March 2020
<i>Cancelled due to Corona pandemic</i>	<i>Bonn, Germany</i>
15th Patras Workshop on Axions, WIMPs, and WISPs	June 2019
	<i>Freiburg, Germany</i>
7th International Fermi Symposium	October 2017
	<i>Garmisch-Partenkirchen, Germany</i>
224th Meeting of the American Astrophysical Society	June 2014
	<i>Boston, MA, USA</i>

Selected Contributed Conference Presentations.....

1st CTA Symposium	May 2019 <i>Bologna, Italy</i>
8th International <i>Fermi</i> Symposium	October 2018 <i>Baltimore, MD, USA</i>
TeV Particle Astrophysics 2018	August 2018 <i>Berlin, Germany</i>
TeV Particle Astrophysics 2017	August 2017 <i>Columbus, OH, USA</i>
Dark Matter at LHC workshop	April 2017 <i>Irvine, CA, USA</i>

Supervision

Supervisor of Phillip Beck's masters thesis <i>Friedrich Alexander University Erlangen-Nuremberg</i>	2020 – present <i>Erlangen, Germany</i>
Co-supervisor of James Davies' PhD thesis <i>Oxford University</i>	2020 – present <i>Oxford, UK</i>
Co-supervisor of Anke Yusafzai's PhD thesis <i>Friedrich Alexander University Erlangen-Nuremberg</i>	2020 – present <i>Erlangen, Germany</i>
Co-supervisor of Tim Unbehaun's masters thesis <i>Friedrich Alexander University Erlangen-Nuremberg</i>	2020 – present <i>Erlangen, Germany</i>
Co-supervisor of Milena Crnogorcevic's masters and PhD theses <i>University of Maryland</i>	2018 – present <i>Maryland, USA</i>
Supervisor of Nickolas Kokron's research project during his PhD rotation <i>Stanford University</i>	2017 <i>Stanford, CA, USA</i>
Supervisor of Axel Erbing's bachelors thesis <i>Stockholm University</i>	2015 <i>Stockholm, Sweden</i>

Teaching and Formal Training in Teaching

Courses and Classes taught.....

Gamma-ray Telescope in the Classroom <i>Friedrich Alexander University Erlangen-Nuremberg</i> Lectures, exercise classes, and observation nights for bachelors and masters students in winter term 2020/2021.	2020 – 2021 <i>Erlangen, Germany</i>
Data Analysis II and Introduction to Machine Learning <i>Friedrich Alexander University Erlangen-Nuremberg</i> Lectures and exercise classes given for masters students in winter term 2019/2020.	2019 – 2020 <i>Erlangen, Germany</i>
Lectures for pre-collegiate students <i>Stanford University</i> Lectures given for high school students during particle physics and cosmology summer courses.	July 2018 <i>Stanford, CA, USA</i>
Lab assistant for undergraduate physics students <i>University of Hamburg</i> Supervision of small groups of students for week-long labs. Included teaching, supervision, feedback and grading.	2011 – 2012 <i>Hamburg, Germany</i>
Tutor for undergraduate physics students <i>University of Hamburg</i>	2007 – 2009 <i>Hamburg, Germany</i>

Training.....

Stanford Scientific Teaching Summer Institute <i>Stanford University</i>	August 2018 <i>Stanford, CA, USA</i>
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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