

Alison M. W. Mitchell

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Employment

01/10/2021 – present	DFG Emmy Noether Group Leader at ECAP, FAU Erlangen-Nürnberg
01/01/2021 – 31/08/2021	Postdoc at the ETH Zurich
01/08/2018 – 31/12/2020	Postdoc at the University of Zurich
01/08/2016 – 31/07/2018	Postdoc at Max-Planck-Institut für Kernphysik, Heidelberg (33% employment)
01/08/2016 – 31/07/2018	Assistant to the Project Scientist (Prof. J. Hinton) of the Cherenkov Telescope Array, CTAO gGmbH (67% employment)

Education

01/09/2013– 28/07/2016	PhD in Physics (Magna cum Laude), University of Heidelberg, Germany Supervisor: Prof. Dr. W. Hofmann, Max-Planck-Institut für Kernphysik, Heidelberg Thesis Title: <i>“Optical Efficiency Calibration for Inhomogeneous IACT Arrays and a Detailed Study of the Highly Extended Pulsar Wind Nebula HESS J1825-137”</i>
09/2008 – 07/2013	BSc MPhys (Hons) in Physics with First Class Honours, University of Warwick, UK

Awarded Grants and Prizes

October 2021	DFG Emmy Noether Grant, Project Number 452934793, MI 2787/1-1 Project title: <i>“Unveiling the Origin of Galactic Cosmic Rays: Exploring Pulsar Environments at the Highest Energies”</i>
November 2020	Recipient of the H.E.S.S. Prize for “outstanding service contributions to the experiment”.
November 2019	University of Zurich Travel Grant for a research visit to University of Adelaide, Australia

Supervision: Current Group Members

Dr. Samuel Spencer	Postdoctoral researcher (since April 2022)
Tina Wach	PhD student (since May 2022)
Giovanni Cozzolongo	PhD student (since October 2023)
Katharina Egg	PhD student (since November 2023)
Tobias Müller	Bachelor thesis (since January 2024)

Supervision: Completed Theses

Mario Engelmann (MSc, 2023)	<i>“Potential Detectability of Gamma-Ray Halos Around Spiral Galaxies”</i>
Thomas Lang (MSc, 2023)	<i>“Satellite Trails in H.E.S.S. Data”</i>
Nick Scharrer (BSc, 2022)	<i>“Modelling Gamma-Ray Spectra of SNRs to predict their Detectability by SWGO”</i>
Darius Grüber (BSc, 2022)	<i>“Analysis and interpretation of three composite VHE gamma-ray sources”</i>
Derin Wilson (2022, FAU)	Exchange student co-supervision: <i>“Analysis of very high energy gamma-ray emission in the region of HESS J1828-099”</i>
Momoka Goto (2020, UZH)	Exchange student: <i>“Muon Calibration algorithms for CTA”</i>
Javier Gomez de la Gandara - Perez (BSc 2020)	Exchange student (Universidad de Cantabria) co-supervision <i>“Predicting the future Pulsar Wind Nebula Population in the TeV Sky”</i>

Teaching

Winter 23/24	Lecturer for <i>Physics I</i> for the BSc <i>Clean Energy Processes</i>
Summer 2023	Lecturer for <i>Physics of Stars</i>
Winter 22/23	Lecturer for <i>Methods of Data Analysis II</i>
09/06/2022	Cover lecturer for <i>Methods of Data Analysis I</i>
Spring 2020	Lecturer for <i>Experimental Astroparticle Physics</i> : 4 out of 12 lectures
25/03/2020	Guest lecture for <i>Nuclear and Particle Physics II</i>
2018– 2019	Tutor for Physics III (modern physics) & physics lab for medicine students, UZH (in German)
2013– 2014	Tutor for undergraduate Introduction to Astrophysics I, Heidelberg (in German)

Other Activities

Scientific Collaborations:

Member of the H.E.S.S. collaboration since 2023, of the CTA Consortium since 2014, and of the SWGO collaboration since 2019. Member of the FACT collaboration during 2021.

Working Group Coordination:

H.E.S.S. Day Shift Coordination (2020-2021), CTA Analysis and Simulations Working Group (2021–2022), SWGO Galactic task force (since 2020), PI for Target of Opportunity observations of Novae with H.E.S.S. (since 2016)

Peer Review:

Acted as a reviewer for the DFG and for the following journals:

Astronomy & Astrophysics; Astronomy & Astrophysics Letters; Astroparticle Physics; Nature Astronomy; Monthly Notices of the Royal Astronomical Society and Physical Review D.

External Review:

Acted as scientific secretary for an external review of CTA SSTs in 2019.

Scientific Meeting Organisation:

SOC for special session on intensity interferometry at IAU 2024, SOC for special session on PeVatrons at EAS 2024, SOC for Gamma-ray Astronomy at ECRS 2024. SOC for RICAP-2022. Organising committee for the Erlangen Astroparticle School since 2022.

Invited Talks:

I have been regularly invited to give seminar talks (since 2017); talks at conferences (since 2019) and outreach talks (since 2022).

Programming: Good knowledge of C/C++ and python

Languages: English - native, German - fluent (C2)

Selected Publications

- Mitchell et al., “*LHAASO J2108+5157 as a Molecular Cloud Illuminated by a Supernova Remnant*”, accepted for publication in A&A (2023)
- Lang et al., “*The Impact of Satellite Trails on H.E.S.S. Astronomical Observations*”, A&A, **677**, (2023) A141
- H.E.S.S. Collaboration, “*Detection of extended gamma-ray emission around the Geminga pulsar with H.E.S.S.*”, A&A, **673**, (2023) A148
- H.E.S.S. Collaboration, “*Time-resolved hadronic particle acceleration in the recurrent nova RS Ophiuchi*”, Science, **376** (2022) 77-80
- Mitchell, “*Status of Ground-based and Galactic Gamma-ray Astronomy*”, PoS(ICRC2021)046
- Mitchell et al., “*Using Interstellar Clouds to Search for Galactic PeVatrons: Gamma-ray Signatures from Supernova Remnants*” MNRAS, **503** (2021) 3522-3539
- Principe et al., “*Energy dependent morphology of the pulsar wind nebula HESS J1825-137 with Fermi-LAT*” A&A, **640** (2020) A76
- Giacinti et al., “*On the TeV Halo Fraction in gamma-ray bright Pulsar Wind Nebulae*” A&A, **636** (2020) A113
- Gaug et al. “*Using muon rings for the calibration of the Cherenkov Telescope Array: A systematic review of the method and its potential accuracy*”, Astrophysical Journal Supplement Series **243** (2019) 11
- Mitchell et al., “*Potential for measuring the longitudinal and lateral profile of muons in TeV air showers with IACTs*” Astropart. Phys. **111**, 23-34 (2019)
- Araya et al., “*Revealing a new region of gamma-ray emission in the vicinity of HESS J1825-137*” MNRAS **485**, 1001-1007 (2019)
- H.E.S.S. Collaboration, “*Particle transport within the pulsar wind nebula HESS J1825-137*” A&A, **621** (2019) A116 (“Highlight” paper)
- Mitchell et al., “*Cross Calibration of Telescope Optical Throughput Efficiencies using Reconstructed Shower Energies for the Cherenkov Telescope Array*” Astropart. Phys. **75**, 1 (2016)