

Scientific Curriculum Vitae

Professional Practice

Since November 2018

Staff researcher at DESY, Zeuthen

Supervision of master and postgraduate students; H.E.S.S. DAQ upgrade lead; H.E.S.S. Operations Department head; Deputy convener of H.E.S.S. Galactic science working group; Support and shaping of DESY role in gamma-ray astronomy with H.E.S.S. and CTA; 8 journal publications as first or corresponding author

March 2014 – November 2018

Postdoctoral researcher at DESY, Zeuthen

Supervision of master and postgraduate students; verification of H.E.S.S. upgrade performance; Lead and implementation of H.E.S.S. transient activities; CTA Monte Carlo pipeline and data reduction studies; Coordinator of CTA cosmic-ray science working group; support and shaping of DESY role in gamma-ray astronomy with H.E.S.S. and CTA; 12 journal publications as first or corresponding author (1 review, 1 publication in *Science*)

March 2011 – February 2014

Feodor-Lynen and postdoctoral researcher at the Universities of Leicester and Leeds, UK

Monte-Carlo studies for CHEC-M camera prototype and CTA camera performance requirements; organizer of the weekly astrophysics seminar; supervision of postgraduate students; 8 journal publications as first or corresponding author

May 2010 – February 2011

Postdoctoral research fellow at MPIK, Heidelberg

Supervision of diploma and postgraduate students; 1 journal publication as first author
University Education

April 2007 – May 2010

PhD in Physics at Ruprecht-Karls-University Heidelberg, Max-Planck-Institute for Nuclear Physics (Prof. Werner Hofmann, magna cum laude)

Thesis title: *“Development of an advanced gamma/hadron separation technique and application to particular gamma-ray sources with H.E.S.S.”*; 1 publication in *Science* journal resulting from this work (130+ citations); 1 technical publication in journal of Astroparticle Physics (70+ citations)

Scientific Profile

- Non-thermal processes and gamma-ray production in colliding wind binaries with focus on the understanding and modeling of the gamma-ray emission in η Carinae
- Non-thermal processes in massive stellar clusters and star-forming regions with focus on analysis and modeling of the gamma-ray emission in Westerlund 1
- Non-thermal emission processes in starburst galaxies and contribution of source populations such as pulsar wind nebulae to the gamma-ray emission
- Non-thermal processes and gamma-ray production in superbubbles, supernova remnants and pulsar wind nebulae in the Large Magellanic Cloud
- Side projects: gamma-ray emission from flaring stars; long-term gamma-ray emission from neutron-star binary mergers, search for gamma-ray emission from Galactic Novae

Technical Profile

- Expert knowledge of the concept and practical implementation of the H.E.S.S. experiment from data acquisition, calibration, data analysis to interpretation of results
- Technical development of machine-learning techniques for gamma-ray astronomy
- Development and implementation of strategies for transient follow-up with H.E.S.S.
- Extension of the H.E.S.S. real-time analysis to hybrid array operation; commissioning on site
- Lab measurements of HESS-I camera upgrade components and performance validation of the upgraded system after commissioning with real data
- Simulation studies to derive CTA CHEC-M camera trigger and readout requirements
- Simulation studies to investigate impact of measurement errors on CTA system performance
- Derivation of CTA Monte-Carlo computing requirements for high-level analysis
- Simulation studies to explore CTA data reduction algorithms

Coordination and Management

- Head of the H.E.S.S. operations department (since 2019)
- Leader of the DESY H.E.S.S. group (since 2017)
- Deputy convener of the H.E.S.S. Galactic Working Group (since 2017)
- Convener of the CTA Cosmic-Ray Science Working Group (2016 – 2018)
- Leader of the H.E.S.S. transients envelope task group (2015 – 2017)
- Deputy convener of the H.E.S.S. Analysis and Reconstruction Working Group (2013 – 2015)
- Convener of the H.E.S.S. Extended Extragalactic Working Group (2012 – 2013)

- Scientific organizing committee of GAD session at ICRC (Berlin, virtual, 2021)
- Scientific organizing committee of GAD session at ICRC (Madison, 2019)
- Scientific organizing committee of gamma-ray session at TeVPA (Berlin, 2018)
- Scientific organizer of Multi-messenger session at HAP topical workshop (Erlangen, 2016)
- Local organizer of H.E.S.S. collaboration meeting (Leicester, 2012)
- Journal referee for MNRAS, A&A, ApJ, Astropart. Phys., Computer Physics Communications
- Proposal referee for JCMT and National Science Centre Poland

Awards and Memberships

- Feodor-Lynen research fellowship (Leeds and Leicester, UK, 2011 – 2013)
- H.E.S.S. prize for outstanding contributions to the H.E.S.S. experiment (2015)
- Member of the H.E.S.S. Collaboration (since 2006)
- Member of the CTA Consortium (since 2011)
- Member of the Humboldt Foundation (since 2011)

Teaching

- DESY summer school (Zeuthen, 2017 and 2018)
- Fermi summer school (Delaware, USA, 2017)
- Winter school on Astroparticle Physics (Ooty, India, 2016)
- KSETA topical course on machine learning (Karlsruhe, 2015)
- Astroteilchenschule (Obertrubach-Bärnfels, 2014)

Outreach and Education

- Regular internal and external public talks at DESY and in the Berlin-Brandenburg area
- Member of the DESYUM [Sounding Board](#)
- Member of the Career Orientation and Skills Training for Postdocs ([COAST](#)) connector team
- Science-meets-art collaborations with Science Communication Lab and Alva Noto ([GRB190829A](#), [Eta Carinae](#))
- Contribution to DESY press releases on [GRB190829A](#), [GRB180720B](#), [A&A special issue on H.E.S.S. Collaboration observations of the Milky Way](#), [GW170817](#), and [discovery of TeV sources in LMC](#)
- Contribution to and coverage in [femto special issue](#) on Cosmic Particle Accelerators
- DESY Science Slam (2017)
- Contributor to the [Helmholtz astroparticle blog](#) (in german)