

CONTACT INFORMATION

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Citizenship: Germany

EDUCATION

- 2018** **Ph.D., Astronomy and Astrophysics (GPA: 4.0, 18.08.2018)**
Steward Observatory, The University of Arizona, Arizona, AZ, USA
Thesis title: "The Formation and Evolution of Supermassive Black Holes: The Extremely Luminous Quasar Survey"
Advisor: Dr. Xiaohui Fan
- 2014** **M.Sc., Physics (Grade: 1.0, 01.09.2014)**
Christian-Albrechts-Universität zu Kiel, Kiel, Germany
Thesis title: "Evolution of Supermassive Black Holes and their host galaxies"
Advisor: Dr. Xiaohui Fan, Prof. Dr. Wolfgang J. Duschl
- 2011** **B.Sc., Physics (Grade: 1.7, 19.10.2011)**
Christian-Albrechts-Universität zu Kiel, Kiel, Germany
Thesis title: "Temporal evolution of self-gravitating accretion discs: self-similar solutions?"
Advisor: Prof. Dr. Wolfgang J. Duschl

PROFESSIONAL APPOINTMENTS

- since 2023 **Emmy Noether Junior Research Group Leader**
Hamburg University, Hamburg, Germany
- 2021 — 2023 **Postdoctoral Researcher** in the group of Dr. Joseph Hennawi
Leiden University, Leiden, The Netherlands
- 2018 — 2021 **Postdoctoral Researcher** in the groups of Dr. Eduardo Bañados and Dr. Fabian Walter
Max Planck Institute for Astronomy, Heidelberg, Germany
- 2012 — 2018 **Graduate research and teaching assistant**
Steward Observatory, University of Arizona, USA

PUBLICATIONS IN REFEREED JOURNALS

53 publications since 2015, with a total of > 2900 citations and an h-index of 29.
(10 as first author, 2 as second author led by an advised student)
A complete publication list is enclosed and available on [NASA/ADS](#).

GRANTS & THIRD PARTY FUNDING

- 2022 **Emmy Noether Independent Junior Research Group (1,750,101 €)**
Deutsche Forschungsgemeinschaft (DFG)
- 2015 **Science PI: HST, Cycle 23, Archival Proposal 14312 (\$149,266)**
Space Telescope Science Institute

AWARDS, HONORS, AND SCHOLARSHIPS

- 2019 **Best Poster Prize**
IAU Symposium 352, Portugal, June 2019
- 2012 **Fulbright Scholarship**, University of Arizona, 2012–2013
The German-American Fulbright Commission
- 2011 **Annual Award for excellent academic achievements and commitment**
Association for the support of the Faculty of Mathematics and Natural Sciences, Kiel University
- 2008 **Student Scholarship**, 2008–2014
German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes)

APPROVED TELESCOPE PROPOSALS

Proposals as Principal Investigator

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| 2024 | JWST (12 h; GO 5734) "Placing a $z=7.27$ AGN in context with cosmic structure formation" |
| 2021 | IRAM/NOEMA (13 h) "NOEMA's unobscured view on the host galaxies of a $z \sim 3.3$ binary quasar" |
| 2020 | IRAM/NOEMA (50 h) "Unveiling the host galaxies of the most luminous quasars at $z \sim 3.5$ " |
| 2019 | IRAM/NOEMA (4 h) "Unveiling the host galaxy of an ultra-luminous super-Eddington quasar at $z = 3.7$ " |
| 2018 — 2020 | LBT/LUCI (14 h) "Weighing the most massive accreting black holes at Cosmic Noon" |
| 2018 — 2020 | Gemini/GNIRS (15 h) "Weighing the most massive accreting black holes at cosmic noon" |
| 2017 — 2018 | Southern Astrophysical Research Telescope (SOAR) (14 nights), CTIO "The Southern Extremely Luminous Quasar Survey (ELQS) at $z \approx 3 - 5$ " |
| 2018 | Vatican Advanced Technology Telescope/MMT (7/1 nights), University of Arizona "The Extremely Luminous Quasar Survey in PanSTARRS 1" |
| 2014 — 2017 | Vatican Advanced Technology Telescope/MMT (43/5 nights), University of Arizona "The Extremely Luminous quasar Survey" |
| 2015 | HST, Cycle 23, Archival Proposal 14312 (\$149,266 - science PI) "Constraining the merger pair fraction of ~ 1000 quasars with a new catalog of PSF subtracted images" |

Selected Proposals as Co-Investigator

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| 2024 | JWST Cycle 3 GO 5893 (PI: Kakiichi, 263 h): "COSMOS-3D: A Legacy Spectroscopic/Imaging Survey of the Early Universe" GO 4691 (PI: Yang, 16 h): "Investigating an Extreme [OIII] Outflow Discovered in a Reionization-era Luminous Quasar" GO 5645 (PI: Farina, Survey program): "A 3D view of the first QSOs: A JWST/NIRSpec survey program" |
| 2023 | JWST Cycle 2 GO 3079 (PI: Eilers, 20 h): "BEES: Black hole Extended Emission Search" GO 4056 (PI: Farina, 9 h): "Shedding Light on Early Structure Formation" GO 3859 (PI: Onoue, 11 h): "Full Characterization of Starlight from a $z=6.4$ Quasar Host Galaxy" GO 3325 (PI: Wang, 45 h): "Mapping the Most Extreme Protoclusters in the Epoch of Reionization" |
| 2021 | JWST Cycle 1 GO 2078 (PI: Wang, 61 h): "A Spectroscopic survey of biased halos in the Reionization Era (ASPIRE)" GO 1764 (PI: Fan, 66 h): "A Comprehensive JWST View of the Most Distant Quasars" GO 1554 (PI: Decarli, 8 h): "Nebular line diagnostics in a merger at cosmic dawn" GO 1967 (PI: Onoue, 50 h): "A Complete Census of Supermassive Black Holes and Host Galaxies at $z=6$ " |

SUPERVISION EXPERIENCE AND TRAINING

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| since 2024 | Radha Anil Gharapurkar (PhD Student, University of Hamburg) primary supervisor |
| 2024 | Niklas Knop (Bachelor student, University of Hamburg) primary supervisor |
| 2024 | MINGZ Supervisor Workshop Part 1 |
| since 2022 | Ben Wang (PhD student, Leiden Observatory) co-supervision of PhD project |
| 2021-2022 | Daming Yang (Master student, Leiden Observatory) co-supervision of Master project, 1 publication |

- 2019 **Zhang-Liang Xie** (summer student, MPIA)
co-supervision of summer project (primary advisor: Eduardo Bañados)
- 2018 — 2019 **Lukas Wenzl** (visiting student, University of Arizona/ Bachelor student, MPIA)
supervision of undergraduate research/Bachelor project, 1 publication

TEACHING

- 2024/25 **Full lecture** — Introduction to Astronomy and Astrophysics 2
Winter Term 2024/2025, University of Hamburg, Germany
- 2024 **Full lecture** — Introduction to Astronomy and Astrophysics 1
Summer Term 2024, University of Hamburg, Germany
- 2016 **1 Guest lecture** — Black holes (Astronomy 203 - Stars)
Steward Observatory, University of Arizona, USA
- 2016 **1 Guest lecture** — Fusion in stars (Astronomy 203 - Stars)
Steward Observatory, University of Arizona, USA
- 2016 **Teaching Assistant** (Astronomy 203 - Stars)
Steward Observatory, University of Arizona, USA
- 2015 **Teaching Assistant** (Astronomy 170B1 - The Physical Universe)
Steward Observatory, University of Arizona, USA

SCIENTIFIC SOFTWARE DEVELOPMENT

- 2022 **Lead developer of Sculptor** - Interactive modeling of (electromagnetic) astronomical spectra
(open-source software, [github](#), [ReadTheDocs](#), [ASCL](#), 5 non-self citations)
- 2021 **Co-developer of simqso** - Module for generating simulated quasar spectra
(open-source software, [github](#), [ReadTheDocs](#), [ASCL](#))
- 2020 **Co-developer of Pypelt** - The Python Spectroscopic Data Reduction Pipeline
(open-source software, [github](#), [ReadTheDocs](#), [Zenodo](#))

TALKS

Invited Talks and Colloquia

- 2024 **Extragalactic Astrophysics Symposium**, May 2024, Heidelberg, Germany
"The emergence and growth of supermassive black holes in the early Universe"
- 2024 **AEI Seminar**, Feb. 2024, Potsdam, Germany
"The Emergence of Quasars - Growing Supermassive Black Holes in the Early Universe"
- 2023 **Astrophysics & Machine Learning Symposium**, June. 2023, Hamburg, Germany
"Structure evolution in the early Universe: Supermassive Black Holes & Machine Learning"
- 2022 **Königstuhl Colloquium**, Jan. 2022, Heidelberg, Germany
"The Rise and Fall of Quasars - The evolution of quasars across cosmic time"
- 2020 **Early Universe/Reionization Era Conversations at Arizona**, Sep. 2020 Tucson, Arizona, USA
"The X-SHOOTER/ALMA sample and the evolution of reionization-era quasars"
- 2018 **LSST-2018 Project and Community Workshop**, Aug. 2018, Tucson, Arizona, USA
"AGN Selection Opportunities and Challenges with the LSST"
- 2016 **Seismology of the Sun and the Distant Stars**, Jul. 2016, Angra do Heroísmo, Portugal
"Asteroseismic Constraints on the Evolutionary Models of Hot Subdwarfs"

Selected Seminar Talks and Conference Contributions

- 2024 **"Probing the Genesis of Supermassive Black Holes"**, Kashiwa, Japan, Nov. 2024

- 2024 "A First Measurement of AGN-Galaxy Clustering at Cosmic Dawn "
MPIA Galaxy Coffee, Sept. 2024, Max Planck Institute for Astronomy, Heidelberg, Germany
 "A galaxy overdensity anchored by a broad-line, low-luminosity AGN at $z = 7.3$ "
- 2024 "**EAS 2024**", Padova, Italy, Jul. 2024
 "Placing a Compact, Red AGN at $z = 7.27$ in Perspective"
- 2023 "**First Light Conference**", Boston, USA, Jun. 2023
 "A first step towards mapping reionisation epoch quasar light-echoes with JWST"
- 2022 **Colloquium**, Nov. 2022, Hamburg Observatory, Hamburg University
 "The Rise and Fall of Quasars"
- 2022 "**What drives the growth of black holes: a decade of reflection**", Reykjavik, Iceland, Sep. 2022
 "Supermassive Black Hole Growth in the Reionization Era"
- 2022 **Quasars and Galaxies through Cosmic Time**, virtual conference, Jan. 2022
 "Insights into quasar evolution in the first two billion years after the Big Bang"
- 2021 **MPIA Galaxy Coffee**, Feb. 2021, Max Planck Institute for Astronomy, Heidelberg, Germany
 "The X-SHOOTER/ALMA sample and the evolution of reionization-era quasars"
- 2020 **Extragalactic group seminar**, Nov. 2020, Institute of Astronomy, Cambridge, UK
 "The X-SHOOTER/ALMA sample and the evolution of reionization-era quasars"
- 2020 **Summer All Zoom Epoch of Reionization Astronomy Conference**, virtual conference, Jul. 2020
 "First Results of the X-SHOOTER/ALMA Sample of Quasars in the Epoch of Reionization"
- 2019 **NOIRLab FLASH Talk**, Nov. 2019, NSF's NOIRLab, Tucson, Arizona, USA
 "The Extremely Luminous Quasar Surveys and the Bright-End Quasar Luminosity Function at Cosmic Noon"
- 2019 **Cosmic Evolution of Quasars: from the First Light to Local Relics**, Oct. 2019, KIAA-PKU, China
 "The Extremely Luminous Quasar Surveys and the Quasar Luminosity Function at Cosmic Noon"
- 2019 **ESO AGN Club**, May 2019, European Southern Observatory, Garching, Germany
 "The Extremely Luminous Quasar Surveys"
- 2018 **NOAO FLASH Talk**, National Optical Astronomy Observatory, Tucson, Arizona, USA
 "The Extremely Luminous Quasar Survey (ELQS) and the Bright-End Quasar Luminosity Function at $z=2.84.5$ "
- 2018 **AAS Meeting #231, PhD Talk**, Jan. 2018, Washington D.C., USA
 "The Extremely Luminous Quasar Survey (ELQS) and the high- z bright-end Quasar Luminosity Function"
- 2017 **Annual Meeting of the Astronomische Gesellschaft**, Sep. 2017, Göttingen, Germany
 "The Extremely Luminous Quasar Survey (ELQS) in SDSS"
- 2015 **7th Meeting on Hot Subdwarf Stars and Related Objects**, Jul. 2016, Oxford, UK
 "MESA Stellar Evolution Models of sdB Stars"
- 2013 **6th Meeting on Hot Subdwarf Stars and Related Objects**, May 2013, Arizona, USA
 "Exploring stellar evolution models of sdB stars using MESA with convective overshoot"

SERVICE

Service to Profession

- since 2025 **Chair** of the "SMBH and AGN" working group within the COSMOS-3D collaboration (60 people)
- since 2025 **Co-lead** of Euclid DR1 Key Project "Discovery of high redshift Euclid quasars", Euclid Consortium
- 2024 **Co-lead organizer**, EAS Special Session S1
 From Galaxies to Quasars and back: Linking galaxy and SMBH evolution in the first two billion years
- 2021 **SOC member**, EAS Symposium S7
 Quasars at the reionization epoch
- 2020 **Lead-organizer**, Splinter session at German Astronomical Society meeting
 Accreting supermassive black holes through cosmic time
- since 2020 **Co-lead** classification working group, LSST AGN science collaboration
- since 2017 **Referee** (MNRAS, A&A, ApJ, PASA, Euclid Consortium)

Departmental Service

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| 2024 — | Work on PhD examination commissions, as a second thesis assessor (Bachelor) |
| 2020 — 2021 | Seminar organizer (Galaxy coffee, MPIA) |
| 2020 — 2021 | Postdoc representative (MPIA) |
| 2019 — 2021 | Time allocation committee (MPIA) |
| 2019 | Ph.D. application committee (IMPRS-HD) |
| 2010 — 2011 | Head of physics student representatives (Kiel) |
| 2009 — 2011 | Student representative on the board of the department of physics (Kiel) |
| 2009 — 2011 | Student representative on the examination board of the physics department (Kiel) |

PUBLIC OUTREACH

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| 2024 | Public Talk (Live-Stream) - Astro & Co, Haus der Astronomie, Heidelberg <i>Auf den Spuren der Quasare</i> |
| 2024 | Public Talk - Sternstundenfestival, Universität Hamburg, Hamburg <i>Das James Webb Weltraumteleskop - Neue Bilder vom Blick zurück ins frühe Universum</i> |
| 2023 | Public Talk - "Wie alles began ...", Universität Hamburg, Hamburg <i>Das James Webb Weltraumteleskop</i> |
| 2017 | Public Talk - Astronomy on Tap Series, Borderlands Brewery, Tucson |
| 2017 | Invited Article - " Warum steht die Erde nie still ", German on-line magazine "Krautreporter" |
| 2016 | Invited talk - "Black Holes", Desert Sky Middle School, Tucson |
| 2015 | Invited talk - "Black Holes", Desert Sky Middle School, Tucson |
| 2014 | Invited talk - "Black Holes", Desert Sky Middle School, Tucson |

PROFESSIONAL MEMBERSHIPS

Deutsche Physikalische Gesellschaft (German Physical Society)
Astronomische Gesellschaft (German Astronomical Society)
Euclid Consortium (Primeval Universe Science Working Group)
LSST AGN Science Collaboration (Classification subgroup co-lead)
4MOST Consortium (4MOST Science Team)
LOFAR Consortium (Member)