

Steward Observatory  
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## EMPLOYMENT

2022 - **Associate Professor of Astronomy with tenure**, University of Arizona  
**Associate Professor of Physics**, University of Arizona

2018 - 2022 **Assistant Professor of Astronomy**, University of Arizona  
**Assistant Professor of Physics**, University of Arizona

2017 - 2018 **Postdoctoral Researcher**, California Institute of Technology

2014 - 2017 **Kavli Fellow**, KIPAC, Stanford University/SLAC

2012 - 2014 **Postdoctoral Researcher**, University of Pennsylvania

## EDUCATION

2012 **PhD in Astrophysics**, California Institute of Technology

2007 **Diplom in Physics**, University of Bonn, Germany

## AWARDS & HONORS

2022 Early Career Award, Universities Research Association (URA)

2022 Curie Award, University of Arizona

2021 Kavli Frontiers Fellow, National Academy of Sciences

2021 Sloan Research Fellowship, Alfred P. Sloan Foundation

2020 Packard Fellowship, David and Lucile Packard Foundation

2020 Maria Goeppert-Mayer Award, American Physical Society (APS)

2019 Early Career Research Award, Department of Energy

2018 Young Scientist Award, International Union of Pure and Applied Physics (IUPAP), Commission on Astrophysics

Kavli Postdoctoral Fellowship, Stanford University (2014-17)

German National Academic Foundation Scholarship 2003-2007

European Space Agency Student Parabolic Flight Campaign 2005

Junior Prize of the German Astronomical Society, 2002

1<sup>st</sup> prize at German National Science Contest for High-School Students, 2002

Wrote and analyzed N-body simulations of galaxy encounters on home computers

## SCIENCE LEADERSHIP

### Dark Energy Survey (DES)

- **Science Committee Co-Chair**, Sept 2018 – May 2021  
*scientific co-lead of an international collaboration with > 400 participants, responsibilities include setting of scientific goals, selection of working group coordinators, representation of the collaboration to funding agencies*
- Coordinator, Theory and Combined Probes Working Group, Sept 2016 – Feb 2020

- Builder with data rights

### Rubin Observatory - Dark Energy Science Collaboration (DESC)

- Convener, LSST-DESC Theory and Joint Probes Working Group, July 2015 – Feb 2018
- Key author, DESC Science Road Map: developed five year vision for Theory group
- Project Lead, TJPCosmo (Joint Probes Cosmology Likelihood), Feb 2018 – Jan 2020

### Nancy Grace Roman Space Telescope

- **Science Investigation Team member**, as co-I of the selected proposal *Cosmology with the High Latitude Survey* (PI: O. Doré)

### Spectrophotometer for the History of the Universe, Epoch of Reionization, and Ices Explorer (SPHEREx, PI: J. Bock)

- Co-I, NASA 2016 Astrophysics MIDEX proposal (selected)
- Lead of Level-4 power spectrum analysis work packages

### SERVICE

- **Panelist** DOE Cosmic Visions Dark Energy Group (2019-2021)
- **External PhD Examiner** *Anna Porredon* (UAB, Barcelona), *Matteo Rizzato* (Sorbonne, Paris)
- **Reviewer** Chilean Science Foundation; Department of Energy *Comparative Review, SCGSR*; European Research Council *Consolidator Grants*; NASA: *Astrophysics Theory Program, HST TAC, NESSF*; NSF: Astronomy Division *Early Career, AAG*; NWO
- **Lead Organizer & SOC chair**, “Blind Analysis in High-Stakes Survey Science: When, Why, and How?” workshop held at SLAC, March 13-15, 2017, bringing together interdisciplinary blinding experts and critics; participants from dark matter direct detection, AMO experiment, gravitational waves, survey cosmology and social sciences. [www.kipac.github.io/Blinding/](http://www.kipac.github.io/Blinding/)
- **SOC** Aspen Center for Physics Workshop “Large scale structure cosmology beyond 2-point statistics” , to be held June 2022
- **SOC** IAU General Assembly Focus Meeting “Concensus Cosmic Shear in the 2020s” , to be held July 2022, Busan, South Korea
- **Program co-chair and LOC** “Conference for Undergraduate Women in Physics 2021/22/23” (postponed due to pandemic, University of Arizona)

### MENTORING AND ADVISING

- PhD students**
- Yu-Hsiu Huang*, 2021-current (Arizona, 1<sup>st</sup> year adviser)
  - Maria Gabriela Cota*, 2021-current (Arizona, 1<sup>st</sup> year adviser)
  - Anne Moore*, 2020-current (Arizona, 1<sup>st</sup> year adviser)
  - Magarete Smith*, 2020-2021 (Arizona, 1<sup>st</sup> year adviser)
  - Pranjal Singh*, 2019-current (Arizona, primary PhD adviser)
  - Paul Rogozenski*, 2018-current (Arizona, primary PhD adviser)
  - Shivam Pandey*, 2017-2022 (University of Pennsylvania, co-adviser)
  - Lucas Seco*, 2017-2020 (University of Pennsylvania, co-adviser)

- Adviser to PhD students on a research project** *Youngsoo Park* (University of Chicago),  
*Emmanuel Schaan* (Princeton), *Chun-Hao To* (Stanford)
- Postdoc Mentees** *Tomomi Sunayama*, 2022-current (JSPS fellow)  
*Yosuke Kobayashi*, 2021-current  
*Joyce Byun*, 2020-2022  
*Xiao Fang*, 2018-2021 (Arizona → BCCP Fellow, Berkeley)  
*Vivian Miranda*, 2018-2021 (Arizona → junior faculty, Stony Brook)
- Coding Tutor** lead 6-week long introduction to scientific computing sessions for  
18 beginning MS students at ICTP-EAIFR, Rwanda
- Lead of Collaboration-Wide Review Process for 50% of all DES papers** (10/18-05/21)  
emphasis on scientific feedback to junior lead-authors

## PUBLICATION RECORD

>100 refereed publications, >13,000 citations, h-index 58 (statistics from google scholar)

### Selected Significant Publications (° indicates student/postdoc mentees)

1. Krause, E. & Eifler, T.: *CosmoLike – cosmological likelihood analyses for photometric surveys*. MNRAS 470, 2100 (2017)  
Significance: introduced consistent multi-probe analysis framework.
2. Krause, E. et al.: *Dark Energy Survey Year 1 Results: Multi-Probe Methodology and Simulated Likelihood Analyses*. arXiv:1706.09359 (2017)  
Significance: Developed and validated model for DES-Y1 analyses.
3. Chisari, N.E., Alonso, D., **Krause, E.** et al. 2019: *Core Cosmology Library: Precision Cosmology Predictions for LSST*. ApJS 242, 2.  
Significance: Analysis framework for Rubin Observatory cosmology analyses.
4. °To, C.-H., Krause, E., et al. : *Dark Energy Survey Year 1 Results: Cosmological Constraints from Cluster Abundances, Weak Lensing, and Galaxy Correlations*. PRL 126, 141301 (2021)  
Significance: First joint and consistent analysis of clusters, weak lensing and clustering; featured on [physics.aps.org](https://physics.aps.org).
5. Krause, E., et al. : *Dark Energy Survey Year 3 Results: Multi-probe modeling validation*. arXiv:2105.13548, submitted to PRD (2021)  
Significance: Theoretical modeling and model validation for DES Year-3 3x2pt analyses.

## SCIENTIFIC PRESENTATIONS (INVITED ONLY)

### more than 100 invited scientific presentations

- **plenary talks at major conference series**, incl. ICHEP2016, EPS-HEP2017, TeVPA2017, Dark Matter2018, 234<sup>th</sup> meeting of American Astronomical Society (2019), Phenomenology 2021, Cosmo'21
- **recent colloquia** Munich, Trieste, Edinburgh, UC Riverside, Amsterdam, UWashington, USC, Aspen Center for Physics, UCSC, MIT, Columbia, Chicago