

# CURRICULUM VITAE OF ZIANG YAN

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## EMPLOYMENT

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<b>Ruhr-University Bochum</b> German Centre for Cosmological Lensing Fellow	2021.11-present
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## EDUCATION

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<b>University of British Columbia, Vancouver</b> PhD in Physics Supervisors: Profs. Gary Hinshaw and Ludovic van Waerbeke Thesis: <i>Probing the Universe with Multiple Large-Scale Structure Tracers</i>	2017.09-2021.08
<b>University of British Columbia, Vancouver</b> MSc in Astronomy Supervisor: Prof. Gary Hinshaw	2015.07-2017.08
<b>Tsinghua University, Beijing</b> BSc in Physics Supervisor: Prof. Charling Tao	2011.09-2015.07

## RESEARCH

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### Research interests

- Probing the dark sector of the Universe with large-scale structure statistics
- Exploring various large-scale structure tracers
- Applying machine learning to cosmology

### Research experience

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| • KiDS-Legacy $3 \times 2$ pt, $6 \times 2$ pt analyses                            | 2022-now  |
| • KiDS-Legacy angular galaxy clustering measurements                               | 2022-now  |
| • Systematics test for UNIONS cosmic shear   | 2021-now  |
| • Developing the Redshift Assessment Infrastructure Layers for DESC                | 2021-now  |
| • Cross-correlating various large-scale structure tracers                          | 2015-now  |
| Supervisors (during PhD): Profs Gary Hinshaw and Ludovic van Waerbeke              |           |
| • Studies on galaxy clusters with machine learning and hydrodynamic simulations    | 2017-2021 |
| Supervisors: Profs Gary Hinshaw and Ludovic van Waerbeke                           |           |
| • Instrument simulation for PIXIE (Master's thesis)                                | 2016-2017 |
| Supervisor: Prof. Gary Hinshaw   |           |
| • An analysis of foreground contamination for CMB polarization (Bachelor's thesis) | 2014-2015 |
| Supervisor: Prof. Charling Tao   |           |
| • Noise analysis for QUBIC (summer research at APC, Paris)                         | 2014.7    |
| Supervisor: Prof. Jean-Christophe Hamilton   |           |
| • Measurement of exoplanet transit (student research training at Tsinghua)         | 2012-2013 |
| Supervisor: Prof. Zhang Youhong  |           |

## COLLABORATIONS

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<b>Dark Energy Science Collaboration</b>	2021-Present
In-kind contributor	
<b>Ultraviolet Near-Infrared Optical Northern Survey</b>	2021-Present
Member	
<b>Kilo-Degree Survey</b>	2019-Present
Member, infrastructure contributor for the Legacy analyses	
<b>Cosmology Large Angular Scale Surveyor</b>	2017-2021
Member	
<b>Primordial Inflation Explorer</b>	2016-2017
Master's thesis project	

## COMPUTER SKILLS

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Skilled in python, Shell script,  $\text{\LaTeX}$ ;  
Familiar with C, IDL, MATLAB;  
Familiar with numerical computation, statistical methods, and data visualization for astronomical data analyses;  
Experience with measuring and modeling large-scale statistics from galaxy catalogs and sky maps;  
Experience with cosmological parameter constraints from measurements;  
Experience with building and analyzing deep neural networks with Tensorflow;  
Software contributions:

- tiaogeng: a package that corrects the selection effects in galaxy angular clustering;
- rail\_som: a SOM-based redshift calibration pipeline implemented in RAIL;
- photerr: a photometric error model for astronomical imaging surveys;
- CIB\_CC: a PYCCL-based package to calculate the halo model for CIB cross-correlations;
- DC2\_mock: photometric realizations and spectroscopic selections from cosmoDC2

## SERVICE

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**Reviewer:** Nature Astronomy, Monthly Notices of the Royal Astronomical Society, Publications of the Astronomical Society of Japan;  
**News & views article author** for Nature Astronomy: *Weighing galaxy clusters by laptop*  
**Organizer** of the journal club at GCCL

## HONORS AND AWARDS

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2020 President's Academic Excellence Initiative PhD Award (UBC)  
2018-2022 UBC Four Year Doctoral Fellowship (UBC)  
2016 Physics and Astronomy Graduate Scholarship (UBC)  
2015 Faculty of Science Graduate Award (UBC)  
2014 The outstanding academic scholarship of Guanghua (Tsinghua)  
2013-2015 Tsinghua Xuetang scholarship (Tsinghua)  
2013-2015 Member Student of Tsinghua Xuetang Physics Program (Tsinghua)  
2012 The outstanding academic scholarship of Zheng Geru (Tsinghua)

## ACADEMIC TALKS

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### Invited Talks / Seminar Talks / Colloquia

- Invited remote talk, DES LSS/WL/TCP call, online, 2024
- Invited seminar talk, Kavli IPMU, 2024
- Invited seminar talk, Institute for Theoretical Physics, Utrecht University, 2024
- Invited seminar talk, Department of Astronomy, Tsinghua University, online, 2023
- Invited seminar talk, Yunnan University, online, 2023

- Seminar talk, CSST seminar, online, 2022
- Colloquium talk, AIRUB, Bochum, 2022
- Seminar talk, University of British Columbia, 2022
- Invited seminar talk, Department of Astronomy, Tsinghua University, 2021
- Invited seminar talk, Shanghai Astronomical Observatory, 2021
- Seminar talk, German Centre for Cosmological Lensing, online, 2020
- Seminar talk, Kavli IPMU, online, 2020
- Seminar talk, CSST seminar, online, 2020
- Group seminar talk, University of Waterloo, online, 2020
- Group seminar talk, Ohio State University, online, 2020
- Group seminar talk, Stanford University and LMU (adjoint meeting), online, 2020
- Invited seminar talk, Tsung-Dao Lee Institute, online, 2020
- Astronomy colloquium talk, University of British Columbia, 2020
- Invited seminar talk, Institut d'Astrophysique Spatiale, 2019

### Contributed Talks / Posters

- Parallel session talk, DESC collaboration meeting at ETH, 2024
- Conference talk, Starting the golden years: going strong after KiDS, Leiden, 2024
- Parallel session talk, DESC collaboration meeting at SLAC, 2023
- Short talk and poster, YITP workshop, 2023
- Talk, KiDS busy week, Hull, UK, 2022
- Talk, Cosmology from home workshop, online, 2022
- Talk, KiDS busy week, Leiden, the Netherlands, 2021
- Invited seminar talk, Department of Astronomy, Tsinghua University, 2021
- Talk, KiDS busy week, online, 2020
- Poster, CosmoGold IAP Workshop, 2019
- Poster, SSI SLAC Summer Institute Workshop, 2017
- Talks, UBC-SFU-TRIUMF adjoint meetings, TRIUMF, 2017, 2019, 2020

## VISITS, WORKSHOPS AND MEETINGS

- DESC collaboration meeting, ETH, Zürich, Switzerland, 2024.07
- Visiting scholar, Kavli IPMU, Kashiwa, Japan, 2024.06
- Visiting scholar, ITP, Utrecht, the Netherlands, 2024.05
- DESC collaboration meeting, SLAC, CA, USA, 2023.07
- KiDS busy weeks, Institutes in Bochum, Leiden, Warsaw, Hull, and London, 2021-2023
- Future Science with CMB x LSS workshop, YITP, Kyoto, Japan, 2023.04
- Tensions in cosmology conference, Corfu, Greece, 2023.04
- Visiting scholar, Department of Astronomy, THU, Beijing, China, 2021.09
- Visiting scholar, Shanghai Astronomical Observatory, Shanghai, China, 2021.08
- CosmoGold IAP 2019 Workshop, IAP, Paris, France, 2019.06
- Visiting scholar, Institut d'Astrophysique Spatiale, Orsay, France, 2019.06
- SSI SLAC Summer Institute 2017 Workshop, SLAC, CA, USA, 2017.08
- Summer Research, APC, Paris, France, 2014.07
- Frontier Conference in Cosmology, Beijing, China, 2014.06

## TEACHING AND MENTORING EXPERIENCE

### Teaching Assistant at UBC

Featured courses: Cosmology, Measurements in Physics, Group theory, High energy astrophysics, Introductory physics

### Mentorship

- Angela Zhou (High-school project): 2019-2021  
*Investigating Hubble tension with dark matter-dark energy interaction models*

- Susrestha Paul Bachelor's project: 2024  
*Extended  $\Lambda$ CDM model with KiDS data*
- Leon Gawlytta (Master's project): 2023-  
*Clustering of Lyman-break galaxies from KiDS*
- Fabian Kampshoff (Master's project): 2024-  
*Cross-correlating KiDS-Legacy, tSZ and CMB lensing*
- Shiyang Zhang (PhD project): 2023-  
*Probing dark matter with lensing-Gamma ray cross-correlation*  
*Selecting dwarf galaxies from Milky Way satellites*

## OUTREACH

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### Public talks

- The Century of the Universe (public talks in three high schools, 2021)
- High Energy Physics *vs* cosmology (Online interview show, 2021, [link](#))
- Your First Cosmology Class (Online interview show, 2021, [link](#))
- Kick Start the Universe (Three Minute Thesis Competition, UBC, 2017)
- Introduction to Astronomy (public talk in a remote middle school in China, 2015)

### Book Translation (To Chinese)

- Chapters of *Knowledge in a Nutshell: Astrophysics* by Sten Odenwald; in press
- *El sistema solar (The Solar System)* by Joel Gabas Masip; ISBN: 12829555
- *Gravity: A Very Short Introduction* by Timothy Clifton; ISBN: 9787544392730

### Other activities

- Writing popular science articles about science, physics and astronomy on social media (Weibo, WeChat Official Account)
- Outreach activity with the Astronomy Club of High School Affiliated to Minzu University
- Volunteer in stargazing activities organized by the Astronomy Club of Tsinghua University

## LANGUAGE SKILLS

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Southern and standard Mandarin (first language), English (fluent), Japanese (intermediate), German (intermediate), Cantonese (moderate)

## REFERENCES

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- Prof Hendrik Hildebrandt Ruhr-University Bochum  
✉ [hendrik@astro.ruhr-uni-bochum.de](mailto:hendrik@astro.ruhr-uni-bochum.de)
- Prof Ludovic van Waerbeke University of British Columbia  
✉ [waerbeke@physics.ubc.ca](mailto:waerbeke@physics.ubc.ca)
- Dr Shahab Joudaki Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas  
✉ [shahab.joudaki@ciemat.es](mailto:shahab.joudaki@ciemat.es)
- Prof Gary Hinshaw University of British Columbia  
✉ [hinshaw@phas.ubc.ca](mailto:hinshaw@phas.ubc.ca)