

# Yanzhe Zhang

## PERSONAL DETAILS

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## EDUCATION

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**University of Massachusetts Amherst** *Amherst, MA, USA* **Sep. 2022-Present**  
2nd-year Ph.D. student, Astronomy  
Initial Research Project co-advised by [Dr. Houjun Mo](#) and [Dr. Katherine Whitaker](#)  
Expected graduate time: Summer 2028

**University of Kansas** *Lawrence, KS, USA* **Aug. 2019-Aug. 2022**  
B.S. in Astronomy with departmental honors, undergraduate research project advised by [Dr. Ian Crossfield](#)  
B.S. in Physics (pre-professional track) with departmental honors, undergraduate research project advised by [Dr. Ian Lewis](#)  
Minor in German Studies  
KU Honors Program

**Kansas Academy Mathematics and Science (KAMS)**  
**Hays High School/Fort Hays State University** *Hays, KS, USA* **Aug. 2016-May 2018**  
High school diploma  
Certification of [Kansas Academy Mathematics and Science \(KAMS\)](#)  
Early College and High School Program

**No. 18 Middle/High School** *Beijing, China* **Aug. 2011-May 2016**

## HONOR AND AWARDS

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[KU International Excellence Award Scholarship](#) **2019-2022**  
The KU International Excellence Award is the most prestigious scholarship, providing international undergraduate students at KU with full tuition waiver.  
Amount: ~\$120,000, awarded by University of Kansas.

**Krehbiel Scholarship & Dr. Walter Fahrner Scholarship** **Summer 2022**  
Two scholarships to support KU students in summer study abroad program in Germany.  
Amount: \$5,000 & \$1,500 (for minor), awarded by Department of German Studies, University of Kansas

[Honors Opportunity Award](#) **Summer 2022**  
Award to support Honors students to take advantage of opportunities for intellectual and academic growth.  
Amount: \$1,000, awarded by University of Kansas.

[Undergraduate Travel Award](#) **Spring 2022**

Award to students who are presenting their research or creative projects at an academic conference.  
Amount: \$500, awarded by University of Kansas

### **KU Undergraduate Research Award, winner of Courtwright Award for Undergraduate Research Excellence**

**Spring 2022**

Award to undergraduate students pursuing original research or creative projects under the general guidance of a research mentor.

The Courtwright Award seeks to recognize undergraduate students with majors in the College of Liberal Arts & Sciences who go above and beyond normal expectations for independent undergraduate research and creative work.

Amount: \$1,000 + \$500, awarded by University of Kansas.

### **James D. Stranathan Memorial Scholarship**

**2021-2022**

Award given by the Department to its outstanding senior-to-be physics majors, which includes a cash stipend for the students' remaining year. The award is based primarily on the student's over-all grade point average.

Amount: \$1,880, awarded by Department of Physics and Astronomy, University of Kansas.

### **Stella Knecht Scholarship**

**2021-2022**

A merit-based scholarship for deserving undergraduate students in German Studies for the academic year 2021-2022.

Amount: \$1,500, awarded by Department of German Studies, University of Kansas.

### **Helga Vigliano German Scholarship**

**2020-2021**

A merit-based scholarship for deserving undergraduate students in German Studies for the academic year 2020-2021.

Amount: \$1,500, awarded by Department of German Studies, University of Kansas.

### **Delta Phi Alpha**

**Induced: May 14th 2022**

The National German Honor Society, KU chapter

### **Sigma Pi Sigma**

**Induced: April 26th 2022**

The Physics Honor Society, KU chapter

### **KU Dean's List**

**All Semesters**

Recognition of students with grade-point averages of 3.5 who have completed at least 12 hours with letter grades.

## **RESEARCH EXPERIENCE**

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### **Star Formation History and Spectral Synthesis Models**

**Sep. 2022-Present**

*Department of Astronomy, University of Massachusetts Amherst, Amherst, MA, USA*

Advisor: **Dr. Houjun Mo**, **Dr. Katherine Whitaker**

1. Principal Component Analysis
2. Star formation history model and spectral synthesis model

### **Muon Collider**

**Jun. 2020-Present**

*Department of Physics and Astronomy, University of Kansas, Lawrence, KS, USA*

Advisor: **Dr. Ian Lewis**

Collaborator: **Dr. KC Kong**, Dr. Ya-Juan Zheng, Zhongtian Dong, Morgan Cassidy

1. Quantum Field Theory, Standard Model and Beyond the Standard Model, top-Higgs Yukawa coupling
2. Muon-muon collision simulation in SM and CPV

3. Kinematic distributions, cut-and-count and  $2\sigma/5\sigma$  likelihood analyses on exclusion and discovery significance

### ExoLab

Jan. 2021-May 2022

*Department of Physics and Astronomy, University of Kansas, Lawrence, KS, USA*

Advisor: [Dr. Ian Crossfield](#)

Graduate Mentor: Alex Polanski

1. Radial velocity and transit light-curve analyses on exoplanet.

### DarkSide Detector

Feb. 2020-May 2020

*Department of Physics and Astronomy, University of Kansas, Lawrence, KS, USA*

Advisor: Dr. Daniel Tapia Takaki

1. Dark matter candidate: weakly interacting massive particles

### Soxhlet Extraction of Avocado Endocarp, Mesocarp, and Exocarp for Biodiesel Production

Sep. 2017-May 2018

*Department of Chemistry, Fort Hays State University, Hays, KS, USA*

Advisor: Dr. Arvin Cruz

1. Biodiesel extraction process.

## PUBLICATIONS

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### Significant Author:

#### 2. A New Star Formation History Model from Principal Component Analysis In prep

Yanzhe Zhang, H.J. Mo, Katherine Whitaker, Shuang Zhou

#### 1. [Probing the CP Structure of the Top Quark Yukawa at the Future Muon Collider](#) Nov. 2023

Morgan E. Cassidy, Zhongtian Dong, Kyoungchul Kong, Ian M. Lewis, **Yanzhe Zhang**, and Ya-Juan Zheng

### Contributing Author:

#### 3. [GJ 1252b: A Hot Terrestrial Super-Earth With no Atmosphere](#) Aug. 2022

Ian J. M. Crossfield, Matej Malik, Michelle L. Hill, Stephen R. Kane, Bradford Foley, Alex S. Polanski, David Coria, Jonathan Brande, **Yanzhe Zhang**, Katherine Wienke, Laura Kreidberg, Nicolas B. Cowan, Diana Dragomir, Varoujan Gorjian, Thomas Mikal-Evans, Bjoern Benneke, Jessie L. Christiansen, Drake Deming, Farisa Y. Morales

Publication: 2022ApJ...937L..17C

#### 2. [Three new brown dwarfs and a massive hot Jupiter revealed by TESS around early-type stars](#) May 2022

Angelica Psaridi, François Bouchy, Monika Lendl, Nolan Grieves, Keivan G. Stassun, Theron Carmichael, Samuel Gill, Pablo A. Peña Rojas, Tianjun Gan, Avi Shporer, Allyson Bieryla, Rafael Brahm, Jessie L. Christiansen, Ian J. M. Crossfield, Franck Galland, Matthew J. Hooton, Jon M. Jenkins, James S. Jenkins, David W. Latham, Michael B. Lund, Joseph E. Rodriguez, Eric B. Ting, Stéphane Udry, Solène Ulmer-Moll, Robert A. Wittenmyer, **Yanzhe Zhang**, George Zhou, Brett Addison, Marion Cointepas, Karen A. Collins, Kevin I. Collins, Adrien Deline, Courtney D. Dressing, Phil Evans, Steven Giacalone, Alexis Heitzmann, Ismael Mireles, Dany Mounzer, Jon Otegi, Don J. Radford, Alexander Rudat, Joshua E. Schlieder, Richard P. Schwarz, Gregor Srdoc, Chris Stockdale, Olga Suarez, Duncan J. Wright, Yinan Zhao

Publication: 2022A&A...664A..94P

#### 1. [Directly Probing the CP-structure of the Higgs-Top Yukawa at HL-LHC and Future Colliders](#) Mar. 2022

Rahool Kumar Barman, Morgan E. Cassidy, Zhongtian Dong, Dorival Gonçalves, Jeong Han Kim, Felix Kling, Kyoungchul Kong, Ian M. Lewis, Yongcheng Wu, **Yanzhe Zhang**, Ya-Juan Zheng  
 Publication: contribution to Snowmass 2021

## PRESENTATIONS AND TALKS

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### Talk:

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| <b>6. CP Violating Top Yukawa Coupling at the Future Muon Collider</b><br>Phenomenology 2022 Symposium, University of Pittsburgh                          | May 2022  |
| <b>5. Finding New Physics via Top-Higgs Coupling in Muon Colliders</b><br>Spring Undergraduate Research Symposium, University of Kansas                   | Apr. 2022 |
| <b>4. CP-Violating Top Yukawa Coupling at the Multi-TeV Muon Collider (Part I)</b><br>Particle Physics on the Plains, University of Kansas                | Apr. 2022 |
| <b>3. Outside of Our Solar System: the Exoplanet, TOI-1107b</b><br>Fall Undergraduate Research Showcase, University of Kansas (online)                    | Nov. 2021 |
| <b>2. Top-Higgs Interactive Simulations and Investigations of Muon Colliders</b><br>American Physical Society Prairie Section 2021 Fall Meeting (virtual) | Nov. 2021 |
| <b>1. Welcome to the SMALLEST World</b><br>Jayhawk Undergraduate Summer Training, Department of Physics and Astronomy, University of Kansas               | Aug. 2021 |

### Poster:

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| <b>4. A New Star Formation History Model from Principal Component Analysis</b><br>American Astronomical Society 243rd Meeting, New Orleans, Louisiana, USA<br>Chambliss graduate student poster competition finalist | Jan. 2024 |
| <b>3. Analysis of Transits and Radial Velocities of the New Hot Jupiter, TOI-1107b</b><br>KU Physics & Astronomy LOcally Organized Assembly (PALOOZA) 2022, University of Kansas                                     | Mar. 2022 |
| <b>2. CP-Violation in the Top-Higgs Interaction at Future Muon Colliders</b><br>American Physical Society Conference of Undergraduate Women in Physics (virtual)   | Jan. 2022 |
| <b>1. Soxhlet Extraction of Avocado Endocarp, Mesocarp, and Exocarp for Biodiesel Production</b><br>American Chemical Society Rocky Mountain Regional Meeting, Loveland, Colorado, USA                               | Oct. 2017 |

## OBSERVATION

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Keck NIRC2	1 night
Breyer Observatory	0.5 night

## TEACHING EXPERIENCE

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|---|-------------|
| <b>Graduate Teaching Assistant</b><br><i>Department of Astronomy, University of Massachusetts Amherst, Amherst, MA, USA</i> | 3 semesters |
| 1. ASTRON 100/101 Labs: Exploring the Universe, Fall 2022, Spring 2023  |             |
| 2. Summer per-college program: Modern Astronomy, <a href="#">Summer 2023</a>  |             |
| 3. ASTRON 170H: Cosmos to Humanity, Fall 2023   |             |

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|---|-------------|
| <b>Undergraduate Teaching Assistant</b> | 7 semesters |
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*Department of Physics and Astronomy, University of Kansas, Lawrence, KS, USA*

1. PHSX 114: College Physics I, Fall 2020, Spring 2021
2. PHSX 115: College Physics II, Spring 2021
3. HNRS 190: First-Year Honor Seminar: Life in China, Beyond Headlines, Fall 2020
4. ASTR 191: Contemporary Astronomy, Fall 2020 (grader), Spring 2022 (grader)
5. PHSX 594: Cosmology and Culture, Spring 2022 (grader)

### **Peer Tutor**

**3 semesters**

*Department of Physics and Astronomy, University of Kansas, Lawrence, KS, USA*

1. Tutored 4 students individually in Physics I (2 students) and II (2 students).

### **High-schooler Teaching Assistant**

**1 semester**

*International Summer School, University of International Business and Economics, Beijing, China*

1. UIBE CHE 100: General Chemistry, Summer 2018

### **High-schooler Lab Assistant**

**1 semester**

*Department of Chemistry, Fort Hays State University, Hays, KS, USA*

1. CHEM 120L: University Chemistry I Lab, Spring 2018

## **OUTREACH**

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### **Science Expo**

**Apr. 2022**

*Sunset Hill Elementary School, Lawrence, KS, USA*

1. Set up and presented physics experiment demos

## **ADDITIONAL EXPERIENCE**

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### **Church Serving**

**Nov. 2019-Present**

*First Baptist Church Amherst, Amherst, MA, USA*

*Rev City Church, Lawrence, KS, USA*

*Lawrence Chinese Evangelical Church, Lawrence, KS, USA*

1. Media Team: trained with camera operations and assisted with Sunday services' filming, recording, and live-streaming in the media team. (RevCity)
2. Outreach Team: helped the International Connection with events planning and organizing. (RevCity and LCEC)
3. Worship Team: led worship. (LCEC)
4. Growth Group: lead weekly Bible study group. (RevCity, LCEC, FBC)
5. Leadership: help church community plan and organize events. (RevCity, FBC)

### **Grad-School Service**

**1 semester**

*Department of Astronomy, University of Massachusetts Amherst, Amherst, MA, USA*

1. Graduate representative, Fall 2023

### **Summer Study Abroad in Germany**

**Jun. 2022-Jul.2022**

*Berlin, Munich and Holzkirchen, Germany*

1. Took conversation, cultural, and literature classes.
2. Participated in daily cultural activities, including visiting museums, monuments, etc.

### **Undergrad Service**

**1 semester**

*Department of Physics and Astronomy, University of Kansas, KS, USA*

1. Undergraduate committee, Spring 2022

### **International Student Ambassador**

**Jul. 2021-Dec. 2021**

*International Student Services, University of Kansas, Lawrence, KS, USA*

1. Worked closely with 5 other international student ambassadors to plan weekly events for international students.
2. Participated in after-class events and helping international students stay connected.
3. Helped International Support Services (ISS) with incoming students recruitment from different countries.

### **Chinese Students & Scholars Friendship Association**

**Oct. 2019-Apr. 2021**

*University of Kansas, Lawrence, KS, USA*

Position: president (Apr. 2020-Apr. 2021)

1. Administrated the entire association, including fiscal expenditure, activities organization, propaganda management, etc.
2. Worked closely with a small group of Chinese students to organize on-campus events such as the annual Mid-Autumn Festival Feast and the annual Spring Festival Gala.
3. Started the Language partnership program (for students who learn Chinese) with the East Asian Languages and Cultural Department at KU.

### **Exchange program**

**Oct. 2014, Jan. 2015**

*No. 18 High School, Beijing, China*

*Carolus Clusius College, Zwolle, Holland*

1. Hosted Dutch partner, visited the Netherlands
2. Visited various historical places and museums
3. Took classes together for a month
4. Completed two creativity projects

## **SKILLS**

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<i>Software</i>	PYTHON (advanced)
	L <sup>A</sup> T <sub>E</sub> X(advanced)
	LINUX (advanced)
	MadGraph5_aMC@NLO (simulation package for collider physics, intermediate)
	KU Cluster (SLURM, basic)
<i>Languages</i>	Mandarin (mother language)
	English (fluent)
	German (three years of studying)
	Korean (one year of studying)

## **PROFESSIONAL REFERENCES**

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<b>Dr. Houjun Mo</b> Professor (413) 577-0394 <a href="mailto:hjmo@umass.edu">hjmo@umass.edu</a>	Department of Astronomy University of Massachusetts Amherst
<b>Dr. Katherine Whitaker</b> Associate Professor (413) 545-3556 <a href="mailto:kwhitaker@astro.umass.edu">kwhitaker@astro.umass.edu</a>	Department of Astronomy University of Massachusetts Amherst
<b>Dr. Ian M. Lewis</b> Associate Professor	Department of Physics and Astronomy University of Kansas

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**Dr. Gregory H. Rudnick**

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