Yanzhe Zhang

PERSONAL DETAILS

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EDUCATION

University of Massachusetts Amherst *Amherst, MA, USA* **Sep. 2022-Present**
Ph.D. candidate, Astronomy

University of Kansas *Lawrence, KS, USA* **Aug. 2019-Aug. 2022**
B.S., Astronomy with departmental honors
B.S., Physics, pre-professional track with departmental honors
Minor in German Studies
KU Honors Program

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 High School *Beijing, China* **Aug. 2014-May 2016**

HONOR AND AWARDS

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 Fahrer 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.

Professor James D. Stranathan Award in Physics **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

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. Spent a year on reading and studying Quantum Field Theory.

2. Studied the Standard Model and used remote servers to run specific simulations of muon collisions.

3. Focused on the top-Higgs coupling and analyzing the various kinematic distributions (in CPV) such as rapidity, transverse momentum, invariant mass, with the events generated using Madgraph5_aMC@NLO.

4. Computed the discovery and exclusion significance of the top-Higgs CP phase based on the traditional cut-and-count analysis and $5\sigma/2\sigma$ likelihood analysis.

5. Oral-presented at the Jayhawk Undergraduate Summer Training (JUST), the APS Prairie Section 2021 Fall Meeting, Particle Physics on the Plains, the Spring Undergraduate Research

Symposium, and Phenomenology 2022 Symposium.
6. Presented a poster at the APS 2022 CUWiP.
7. Published a report in contribution to Snowmass 2021.
8. Preparing to write and publish a paper on muon colliders.

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. Explored computational projects by using Python software from GitHub for analyzing data, learning to use Linux system and remote computers, and working independently.
2. Studied the analyses of radial velocity measurements using the RadVel package and the transiting light curve measurements using the exoplanet package in Python.
3. Focused on the exoplanet, TOI-1107b, and studied its radial velocity and its host star's light curve.
4. Studied Eureka, a python package that induces and analyzes for time-series observations with the James Webb Space Telescope (JWST).
5. Oral-presented at the Fall Undergraduate Research Showcase at KU.
6. Presented a poster at PALOOZA at KU.
7. Contributed to a publication on the exoplanet, TOI-1107b.
8. Contributed to a publication on the exoplanet, GJ 1252b.

DarkSide Detector **Feb. 2020-May 2020**

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

Advisor: Dr. Daniel Tapia Takaki

1. Went through the DarkSide Collaboration presentation and watched the videos from the Summer Student Lecture Programme Course about particle physics and the detection of a potential candidate of dark matter: weakly interacting massive particles (WIMPs)
2. Had weekly discussion section with my advisor

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. Assisted a graduate student in the laboratory with the extraction experiment by recording daily observations and the measurements on the biodiesel extraction process.
2. Analyzed the compositions of endocarp, mesocarp, and exocarp of avocado from the results using Gas Chromatography – Mass Spectrometry (GS-MS).
3. Presented a poster at the ACS Rocky Mountain Regional Meeting.

PUBLICATIONS

Contributing Author:

CP Violating Top Yukawa Coupling at the Future Muon Collider **In prep**

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

GJ 1252b: A Hot Terrestrial Super-Earth With no Atmosphere **Apr. 2022**

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

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

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

PRESENTATIONS AND TALKS

9. CP Violating Top Yukawa Coupling at the Future Muon Collider **May 2022**

PowerPoint presentation at the Phenomenology 2022 Symposium, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

8. Finding New Physics via Top-Higgs Coupling in Muon Colliders **Apr. 2022**

PowerPoint presentation at the Spring Undergraduate Research Symposium, University of Kansas, Lawrence, Kansas, USA

7. CP-Violating Top Yukawa Coupling at the Multi-TeV Muon Collider (Part I) **Apr. 2022**

PowerPoint presentation at Particle Physics on the Plains, University of Kansas, Lawrence, Kansas, USA

6. Analysis of Transits and Radial Velocities of the New Hot Jupiter, TOI-1107b **Mar. 2022**

Poster presentation at KU Physics & Astronomy LOcally Organized Assembly (PALOOZA) 2022, University of Kansas, Lawrence, Kansas, USA

5. CP-Violation in the Top-Higgs Interaction at Future Muon Colliders **Jan. 2022**

Poster presentation at the APS Conference of Undergraduate Women in Physics (virtual)

4. Outside of Our Solar System: the Exoplanet, TOI-1107b **Nov. 2021**

PowerPoint presentation at the Fall Undergraduate Research Showcase, University of Kansas, Lawrence, Kansas, USA (online)

3. Top-Higgs Interactive Simulations and Investigations of Muon Colliders **Nov. 2021**

PowerPoint presentation at the APS Prairie Section 2021 Fall Meeting (virtual)

2. Welcome to the SMALLEST World **Aug. 2021**

PowerPoint presentation at the Jayhawk Undergraduate Summer Training, Department of Physics and Astronomy, University of Kansas, Lawrence, Kansas, USA

1. Soxhlet Extraction of Avocado Endocarp, Mesocarp, and Exocarp for Biodiesel Production **Oct. 2017**

Poster presentation at the American Chemical Society Rocky Mountain Regional Meeting, Loveland, Colorado, USA

OBSERVATION

Keck NIRC2 **1 night**

TEACHING EXPERIENCE

Teaching Assistant (College Physics I and II) **Jan. 2020-May 2021**

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

1. Attended in class lectures, helping students with in-class worksheets and professors with organizing the class.
2. Held office hours at least 6 hours a week, helping students with their homework and reviewing the materials covered in class.
3. Developed different teaching methods to meet students' varying needs and learning styles.

Teaching Assistant (First-Year Honor Seminar: Life in China, Beyond Headlines) **Aug. 2020-Dec. 2020**

Honor Program, University of Kansas, Lawrence, KS, USA

1. Attended lectures weekly, assisting the professor in explaining materials and helping students get a better understanding of China and Chinese culture.
2. Helped students put up a 20 minutes final presentation using VoiceThread.

Peer Tutor **Aug. 2019-Jul. 2020**

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

1. Tutored 4 students individually in both Physics I and Physics II.
2. Assisted with exam preparation, class materials reviewing and lab report production.
3. Developed strategies for working with different students based on individual learning needs and background knowledge.

Teaching Assistant (General Chemistry) **Summer 2018**

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

1. Held weekly Q&A section independently.
2. Graded quizzes, exams, and homework.
3. Communicated regularly with Academic Coordinator, offering assessment of student progress.
4. Organized off class activities with other teaching assistants.

Lab Assistant (General Chemistry I Laboratory) **Jan. 2018-May 2018**

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

1. Assisted the professor with laboratory teaching and organization.
2. Helped students develop lab procedure and report.

OUTREACH

Science Expo **Apr. 2022**

Sunset Hill Elementary School, Lawrence, KS, USA

1. Set up and presented physics experiment demos

ADDITIONAL EXPERIENCE

Summer Study Abroad in Germany **Jun. 2022-Jul.2022**

Berlin and Munich, Germany

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

Church Serving **Nov. 2019-May 2022**

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.
2. Outreach Team: helped the International Connection with events planning and organizing.
3. Worship Team: led worship.

Undergraduate Committee **Jan. 2022-May 2022**

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

1. Participated in monthly committee meeting with faculties and stuffs, propose motions regarding departmental issues and vote.

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.

Grader **3 Semesters**

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

1. ASTR 191 Contemporary Astronomy
2. PHSX 594 Cosmology and Culture

SKILLS

Languages Mandarin (mother language)
English (fluent)

	German (three years of studying) Korean (one year of studying)
Software	PYTHON (advanced) LaTeX(advanced) LINUX (advanced) MadGraph5_aMC@NLO (simulation package for collider physics, intermediate) KU Cluster (SLURM, basic)

PROFESSIONAL REFERENCES

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