

Thea Kozakis

ASTROPHYSICIST · ASTROBIOLOGIST

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“Imagination will often carry us to worlds that never were, but without it we go nowhere.” - Carl Sagan

Education & Academic Positions

Postdoctoral Researcher

INSTITUTO DE ASTROFÍSICA DE ANDALUCÍA
• Severo Ochoa Postdoctoral Fellow

Granada, Spain
2024- present

Postdoctoral Researcher

NATIONAL SPACE INSTITUTE, TECHNICAL UNIVERSITY OF DENMARK
• Postdoctoral fellowship with Exoplanet Group

Lyngby, Denmark
2020 - 2024

PhD Astrophysics

CARL SAGAN INSTITUTE, CORNELL UNIVERSITY
• Advisor: Lisa Kaltenegger
• Thesis: Stellar UV Environments and Planetary Habitability Throughout Stellar Evolution

Ithaca, New York, USA
August 2020

MS Astrophysics

CARL SAGAN INSTITUTE, CORNELL UNIVERSITY
• Funded by New York Space Grant

Ithaca, New York, USA
May 2017

BS Astrophysics, BS Physics

COLLEGE OF CHARLESTON
• Advisor: Joseph Carson
• Thesis: Directly Imaging Planets Around High-Mass Stars
• Minor: Mathematics

Charleston, South Carolina, USA
May 2013

Areas of expertise

impacts of stellar host spectrum on planetary composition; climate/photochemistry modeling of planetary atmospheres; simulation of transmission/reflected light/emission planetary spectra; ozone formation and destruction; habitable zone modeling; red giant planetary systems; white dwarf planetary systems; UV photometry; direct imaging of exoplanets/disks

Publications

G. L., Villanueva, ... **T. Kozakis**, et al. 2024, *Modeling Atmospheric Lines by the Exoplanet Community (MALBEC) Version 1.0: A CUISINES Radiative Transfer Intercomparison Project*, PSJ, 5, 64

T. Kozakis, J. M. Mendonça, L. A. Buchhave, 2022, *Is ozone a reliable proxy for molecular oxygen? I. The O₂-O₃ relationship for Earth-like atmospheres*, A & A, 665, A156

S. P., Quanz, ... **T. Kozakis**, et al. 2022, *Large Interferometer For Exoplanets (LIFE). I. Improved exoplanet detection yield estimates for a large mid-infrared space-interferometer mission*, A & A, 664, A21

Z. Lin, S. Seager, S. Ranjan, **T. Kozakis**, & L. Kaltenegger, 2022, *H₂-dominated Atmosphere as an Indicator of Second-generation Rocky White Dwarf Exoplanets*, ApJL, 925, L10

T. Kozakis & L. Kaltenegger, 2020, *High resolution Spectra of Earth-Like Planets Orbiting Red Giant Host Stars*, AJ, 160, 225

L. Kaltenegger, R. J. MacDonald, **T. Kozakis**, et al., 2020, *The White Dwarf Opportunity: Robust Detections of Molecules in Earth-like Exoplanet Atmospheres with the James Webb Space Telescope*, ApJL, 901, L1

T. Kozakis, Z. Lin, L. Kaltenegger, 2020, *Planetary Spectra and Biosignatures of Earth-like Planets Orbiting in the White Dwarf Habitable Zone*, ApJL, 894, L6

T. Kozakis & L. Kaltenegger, 2019, *Atmospheres and UV Environments of Earth-like Planets throughout Post-main-sequence Evolution*, ApJ, 875, 99

T. Kozakis, L. Kaltenegger, & D.W. Hoard, 2018, *UV Surface Environments and Atmospheres of Earth-like Planets Orbiting White Dwarfs*, *ApJ*, 862, 69

T. Boyajian, ... **T. Kozakis**, et al., 2016, *Planet Hunters X. KIC 8462852: Where's the flux?*, *MNRAS*, 457, 3988

J. Carson, C. Thalmann, M. Janson, **T. Kozakis**, et al., 2013, *Direct Imaging Discovery of a 'Super-Jupiter' Around the late B-Type Star κ And*, *ApJL*, 763, 32

Academic Honors & Grants

2024-2027 Severo Ochoa Grant , IAA-CSIC Severo Ochoa Center	Instituto de Astrofísica de Andalucía
2019 NASA New York Space Grant , NASA New York Space Grant Consortium	Cornell University
2016 Eleanor York Prize , Astronomy and Space Sciences Department	Cornell University
2015 Exemplary Poster Award , Emerging Researchers in Exoplanet Science Symposium	Pennsylvania State University
2013-2014 NASA New York Space Grant , NASA New York Space Grant Consortium	Cornell University
2014, 2015 NSF Graduate Fellowship Honorable Mention , National Science Foundation	Cornell University
2013 Outstanding Undergraduate Research Award , South Carolina Academy of Science	College of Charleston
2013 Department Honors Award , Department of Physics & Astronomy	College of Charleston
2013 Outstanding Student Award , School of Sciences and Mathematics	College of Charleston
2012 Major Academic Year Support Grant , School of Sciences and Mathematics	College of Charleston
2012 Summer Undergraduate Research with Faculty Grant , School of Sciences and Mathematics	College of Charleston
2012 Goldwater Scholarship Honorable Mention , Scholarship & Excellence in Education Foundation	College of Charleston

Presentations

Biennial European Astrobiology Conference, poster	La Palma, Spain
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	May 2023
Exoplanets & Habitability Seminar Series, invited talk	Zurich, Switzerland (online)
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	March 2023
Europlanet Science Congress, talk	Granada, Spain
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	September 2022
MPIA-APEX Exocoffee, invited talk	Heidelberg, Germany (online)
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	September 2022
Latsis Origins of Life Symposium, talk	Zurich, Switzerland
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	September 2022
CHAMELEON retreat, invited talk	Copenhagen, Denmark
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	September 2022
Danish Annual Astronomy Meeting, talk	Fredericia, Denmark
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	May 2022
Astrobiology Science Conference, talk	Atlanta, Georgia, USA
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	May 2022
Exoplanets IV, poster	Las Vegas, Nevada, USA
IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?	May 2022
Cambridge Exoplanet Seminar, invited talk	Cambridge University, Cambridge, UK (online)
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	June 2021

Annual Danish Astronomy Meeting, talk	Online
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	May 2021
STScI Exoplanets, Star and Planet Formation Seminar, invited talk	Space Telescope Science Institute, Maryland, USA (online)
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	May 2021
Valparaiso University Physics & Astronomy Colloquium, invited talk	Valparaiso University, Valparaiso, Indiana, USA (online)
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	March 2021
AAS Winter Meeting, talk	Online
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	January 2021
MIT Exoplanet Tea, invited talk	MIT, Cambridge, Massachusetts, USA (online)
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	October 2020
Exoplanets III, talk	Heidelberg, Germany (online)
LIFE AFTER (STELLAR) DEATH: ATMOSPHERES AND BIOSIGNATURES OF EARTH-LIKE PLANETS ORBITING IN THE HABITABLE ZONES OF WHITE DWARFS	July 2020
AAS Winter Meeting, dissertation talk	Honolulu, Hawai'i, USA
PLANETARY HABITABILITY AND BIOSIGNATURES THROUGHOUT STELLAR EVOLUTION	January 2020
Extreme Solar Systems IV, poster	Reykjavík, Iceland
DYING TO LIVE: POST-MAIN SEQUENCE HABITABILITY	August 2019
Exoclimates V, poster	University of Oxford, Oxford, UK
DYING TO LIVE: POST-MAIN SEQUENCE HABITABILITY	August 2019
Astrobiology Graduate Conference, talk	Salt Lake City, Utah, USA
ATMOSPHERES AND UV ENVIRONMENTS OF PLANETS THROUGHOUT POST-MAIN SEQUENCE EVOLUTION	July 2019
Emerging Researchers in Exoplanet Science Symposium, talk	Cornell University, Ithaca, New York, USA
ATMOSPHERES AND UV ENVIRONMENTS OF PLANETS THROUGHOUT POST-MAIN SEQUENCE EVOLUTION	June 2019
AAS Winter Meeting, talk	Seattle, Washington, USA
HABITABILITY OF POST-MAIN SEQUENCE PLANETARY SYSTEMS	January 2019
Planetary Lunch Talk Series, talk	Cornell University, Ithaca, New York, USA
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	August 2018
Graduate Student/Post-Doctorate Seminar, talk	Cornell University, Ithaca, New York, USA
DYING TO LIVE: POST-MAIN SEQUENCE HABITABILITY	August 2018
Cool Stars 20, poster	Boston, Massachusetts, USA
ATMOSPHERES AND UV GROUND ENVIRONMENT FOR PLANETS ORBITING RED GIANTS	August 2018
University of St Andrews, invited talk	University of St Andrews, St Andrews, UK
UV SURFACE ENVIRONMENTS AND ATMOSPHERES OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	July 2018
University of Edinburgh, invited talk	University of Edinburgh, Edinburgh, UK
UV SURFACE ENVIRONMENTS AND ATMOSPHERES OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	July 2018
Exoplanets II, poster	Cambridge University, Cambridge, UK
UV SURFACE ENVIRONMENTS AND ATMOSPHERES OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	July 2018

Graduate Student/Post Doctorate Seminar, talk

Cornell University, Ithaca, New York,
USA

DO YOU BELIEVE IN LIFE AFTER (STELLAR) DEATH?: WHITE DWARF HABITABILITY

June 2018

Emerging Researchers in Exoplanet Science Symposium, poster

Pennsylvania State University, State
College, Pennsylvania, USA

ATMOSPHERES AND UV GROUND ENVIRONMENT FOR PLANETS ORBITING RED GIANTS

June 2018

Emerging Researchers in Exoplanet Science Symposium, talk

Pennsylvania State University, State
College, Pennsylvania, USA

BIOSIGNATURES AND UV ENVIRONMENTS OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS

June 2017

Astrobiology Graduate Conference, talk

Charlottesville, Virginia, USA

BIOSIGNATURES AND UV ENVIRONMENTS OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS

June 2017

Astrobiology Science Conference, poster

Mesa, Arizona, USA

BIOSIGNATURES AND UV ENVIRONMENTS OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS

April 2017

Astrobiology Science Conference, poster

Chicago, Illinois, USA

AGE ROTATION-ACTIVITY RELATIONSHIP OF KEPLER FIELD STARS

June 2015

Emerging Researchers in Exoplanet Science Symposium, poster

Pennsylvania State University, State
College, Pennsylvania, USA

AGE ROTATION-ACTIVITY RELATIONSHIP OF KEPLER FIELD STARS

May 2015

South Carolina Academy of Science Conference, talk

Columbia, South Carolina, USA

DIRECT IMAGING DISCOVERY OF A 'SUPER-JUPITER' AROUND A LATE B-TYPE STAR

April 2013

AAS Winter Meeting, poster

Long Beach, California, USA

THE SUBARU SEEDS IMAGING SEARCH FOR EXOPLANETS AROUND HIGH-MASS STARS

January 2013

AAS Winter Meeting, poster

Austin, TX, USA

THE SUBARU SEEDS IMAGING SEARCH FOR EXOPLANETS AROUND HIGH-MASS STARS

January 2012

Accepted observing proposals

JWST Cycle2, GO4195, *Constraining the Oxidation State of the Super-Earth TOI-1685 b*, PI: Fisher, C.

JWST Cycle 2, GO 4126, *TOI-125: Comparative Atmospheric Chemistry Within One System*, PI: Fisher, C.

HST Cycle 29, GO 16722, *An HST exclusive look at two rising stars: high-energy spectra of the two closest M dwarfs to host transiting terrestrial exoplanets*, PI: Diamond-Lowe, H.

JWST Cycle 1, GO 2420, *Probing the Terrestrial Planet TRAPPIST-1c for the Presence of an Atmosphere*, PI: Rathcke, A.

JWST Cycle 1, GO 2358, *Under the Light of a Dead Star: Revealing the Atmospheric Composition of a White Dwarf Planet*, PI: MacDonald, R.

JWST Cycle 1, GO 2159, *The first near-infrared spectroscopic phase-curve of a super-Earth*, PI: Espinoza, N.

JWST Cycle 1, GO 2113, *Exploring the morning and evening limbs of a transiting exoplanet*, PI: Espinoza, N.

Teaching

Teaching Assistant: From New Worlds to Black Holes

Cornell University, Ithaca, NY, USA

LECTURER: DR LISA KALTENEGGER

Fall 2015 (Head TA), 2018

- Introductory astronomy class focusing on the Universe as a whole
- Organized other TAs, managed course website, and dealt with logistical issues
- Assisted in writing and grading homework assignments and exams
- Taught recitation sections and held office hours

Teaching Assistant: Our Solar System

LECTURERS: DRs STEVE SQUIRES AND PHIL NICHOLSON

- Introductory astronomy class focusing on the Solar System
- Taught recitation sections and lab sections and held office hours
- Assisted in writing and grading homework assignments and exams

Cornell University, Ithaca, NY, USA

Spring 2015

Teaching Assistant: A Spacecraft Tour of the Solar System: Science, Policy and Exploration

LECTURER: DR ALEXANDER HAYES

- Writing class focused on exploration of the Solar System
- Assisted in teaching students how to write popular science articles
- Graded written work and gave feedback and held office hours
- Managed course website

Cornell University, Ithaca, NY, USA

Fall 2014

Teaching Assistant: Introductory Astronomy Lab

LAB MANAGER: CHRISTOPHER TRUE

- Introductory astronomy class
- Assisted instructor in running labs and teaching the students
- Set up telescopes and taught students how to operate them

College of Charleston, SC USA

Fall 2010-Spring 2011

Physics Lab Manager's Assistant

LAB MANAGER: KATHLEEN LOW

- Held office hours for students in introductory physics classes
- Helped prepare equipment for physics labs and assist lab instructors
- Organized lab materials and equipment

College of Charleston, SC USA

Fall 2009-Spring 2013

Selected Outreach

Astronomy on Tap - Copenhagen chapter

Copenhagen, Denmark

ORGANIZING TEAM/SPEAKER

2021-2022

- Monthly outreach event where professional astronomers give public talks in a local pub
- Planned event themes and invited relevant speakers
- Helped facilitate/host events and ensured that speakers had proper equipment and addressing problems as they arose

Expanding Your Horizons

Cornell University, Ithaca, NY, USA

WORKSHOP DESIGNER/ORGANIZER

2015-2020

- Yearly outreach event attended by middle school girls from New York to learn about the different STEM fields
- Part of the original astronomy workshop design team, team leader for the past 2 years
- Wrote yearly applications for event approval, recruit/train volunteers and run event

Mental Health Counselor Training (EARS)

Ithaca, NY, USA

CERTIFIED MENTAL HEALTH COUNSELOR/TRAINER

2015-2020

- Semester long training offered by EARS (Empathy Assistance and Referral Service), a walk-in mental health counseling program
- Give presentations on empathetic listening and communication skills to Cornell students of all levels
- Small group teaching of Cornell graduate students and post doctoral researchers skills of mental health counseling

Cornell's Ask an Astronomer

Ithaca, NY, USA

TEAM MEMBER

2013-2020

- Answered questions from the general public submitted to Cornell's Ask an Astronomer webpage
- Helped update the website with new question answers
- Recruited new team members

Museum in the Dark

Ithaca, NY, USA

ORGANIZER

2014-2017

- Halloween-themed outreach event at a local museum with astronomy related demos
- Liaison between the museum and the astronomy department
- Recruited/trained volunteers to run science demos and obtained/organized all materials for the event

4-H Focus for Teens Workshop

Cornell University, Ithaca, NY, USA

ORGANIZER

2014-2017

- Summer outreach event for high school students in the New York 4-H program to attend STEM related workshops
- Helped design/modify the 3 day workshop
- Visited local schools to teach about astronomy/being an astronomer

Astronomy night

College of Charleston, SC, USA

ORGANIZER

2010-2013

- Helped organize monthly event where the general public could visit the observatory
- Set up/ran physics and astronomy demonstration
- Recruited/trained new volunteers

Academic Service

SOC

Fredericia, Denmark

ANNUAL DANISH ASTRONOMY MEETING

June 2023

Board member

Technical University of Denmark

KVINDER I FYSIK

October 2021 - present

Organizer

Technical University of Denmark

ASTRONOMY & ASTROPHYSICS SEMINAR

September 2021 - present

SOC/session chair

Fredericia, Denmark

ANNUAL DANISH ASTRONOMY MEETING

May 2022

SOC/VOC/session chair

Online

EMERGING RESEARCHERS IN EXOPLANET SCIENCE SYMPOSIUM

June 2021

Session chair

Online

AAS WINTER MEETING

January 2021

Session chair

Honolulu, Hawai'i

AAS WINTER MEETING

January 2020

SOC/LOC/session chair

Cornell University

EMERGING RESEARCHERS IN EXOPLANET SCIENCE SYMPOSIUM

June 2019

SOC/session chair

Yale University

EMERGING RESEARCHERS IN EXOPLANET SCIENCE SYMPOSIUM

June 2017

SOC/LOC/session chair

Cornell University

EMERGING RESEARCHERS IN EXOPLANET SCIENCE SYMPOSIUM

June 2016

Organizer

Cornell University

CORNELL PLANETARY LUNCH SEMINAR

August 2015 - May 2016

Reviewer

Royal Society Open Science

Reviewer

Astrophysical Journal