

Thea Kozakis

ASTROPHYSICIST · ASTROBIOLOGIST

Instituto de Astrofísica de Andalucía, Granada, Spain

✉ theakozakis@gmail.com | 🌐 <http://theakozakis.com>

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

Education & Academic Positions

Postdoctoral Researcher

Granada, Spain

October 2024- present

INSTITUTO DE ASTROFÍSICA DE ANDALUCÍA

- Severo Ochoa Postdoctoral Fellow
- Supervisor: Luisa M. Lara
- Main topic: atmospheric modeling of Earth-like planets with variations in oxygen and biological fluxes

Postdoctoral Researcher

Lyngeby, Denmark

September 2020 - March 2024*

NATIONAL SPACE INSTITUTE, TECHNICAL UNIVERSITY OF DENMARK

- Postdoctoral fellowship with Exoplanet Group
- Supervisors: João M. Mendonça and Lars A. Buchhave
- Main topic: atmospheric modeling of Earth-like planets with variations in oxygen

PhD Astrophysics

Ithaca, New York, USA

August 2020

CARL SAGAN INSTITUTE, CORNELL UNIVERSITY

- Supervisor: Lisa Kaltenegger
- Thesis title: Last Call For Life: Habitability of Terrestrial Planets Orbiting Red Giants and White Dwarfs

MS Astrophysics

Ithaca, New York, USA

May 2017

CARL SAGAN INSTITUTE, CORNELL UNIVERSITY

- Partially funded by New York Space Grant
- Supervisors: James Lloyd and Lisa Kaltenegger
- Main topics: UV observations of Kepler field stars, modeling of Earth-like atmospheres around different host stars

BS Astrophysics, BS Physics

Charleston, South Carolina, USA

May 2013

COLLEGE OF CHARLESTON

- Minor: Mathematics
- Supervisor: Joseph Carson
- Thesis title: Directly Imaging Exoplanets Around High-Mass Stars

*Official medical leave from June 2023 - September 2024

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

J. L. Grenfell, ... **T. Kozakis**, et al. 2025, *Detectability of Atmospheric Climate and Biosignatures with the Large Interferometer for Exoplanets (LIFE) for terrestrial-type Exoplanets*, Monthly Notices of the Royal Astronomical Society, staf1878, DOI: 10.1093/mnras/staf1878

T. Kozakis, J. M. Mendonça, L. A. Buchhave, L. M. Lara, 2025, *Is ozone a reliable proxy for molecular oxygen? III. The impact of CH₄ on the O₂-O₃ relationship for Earth-like atmospheres*, Astronomy & Astrophysics, 701, A254, DOI: 10.1051/0004-6361/202556015

T. Kozakis, J. M. Mendonça, L. A. Buchhave, L. M. Lara, 2025, *Is ozone a reliable proxy for molecular oxygen? II. The impact of N₂O on the O₂-O₃ relationship for Earth-like atmospheres*, Astronomy & Astrophysics, 699, A247, DOI: 10.1051/0004-6361/202555289

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*, Planetary Science Journal, 5, 64, DOI: 10.3847/PSJ/ad2681

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*, Astronomy & Astrophysics, 665, A156, DOI: 10.1051/0004-6361/202244164

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*, Astronomy & Astrophysics, 664, A21, DOI: 10.1051/0004-6361/202140366

Z. Lin, S. Seager, S. Ranjan, **T. Kozakis**, & L. Kaltenegger, 2022, *H₂-dominated Atmosphere as an Indicator of Second-generation Rocky White Dwarf Exoplanets*, Astrophysical Journal Letters, 925, L10, DOI: 10.3847/2041-8213/ac4788

T. Kozakis & L. Kaltenegger, 2020, *High resolution Spectra of Earth-Like Planets Orbiting Red Giant Host Stars*, Astronomical Journal, 160, 225, 10.3847/1538-3881/abb9ac

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*, Astrophysical Journal Letters, 901, L1, DOI: 10.3847/2041-8213/aba9d3

T. Kozakis, Z. Lin, L. Kaltenegger, 2020, *Planetary Spectra and Biosignatures of Earth-like Planets Orbiting in the White Dwarf Habitable Zone*, Astrophysical Journal Letters, 894, L6, DOI: 10.3847/2041-8213/ab6f6a

T. Kozakis & L. Kaltenegger, 2019, *Atmospheres and UV Environments of Earth-like Planets throughout Post-main-sequence Evolution*, Astrophysical Journal, 875, 99, DOI: 10.3847/1538-4357/ab11d3

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

T. Boyajian, ... **T. Kozakis**, et al., 2016, *Planet Hunters X. KIC 8462852: Where's the flux?*, Monthly Notices of the Royal Astronomical Society, 457, 3988, DOI: 10.1093/mnras/stw218

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*, Astrophysical Journal Letters, 763, 32, DOI: 10.1088/2041-8205/763/2/L32

Academic Honors & Grants

2026	Marie Skłodowska-Curie Actions Seal of Excellence , European Comission	Instituto de Astrofísica de Andalucía
2024-2026	Severo Ochoa Postdoctoral 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 for Academic and Outreach Excellence , 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

Science and Technology for the Era of LIFE, talk

Barcelona, Spain

EXPLORING OZONE AS A REPLACEMENT FOR MOLECULAR OXYGEN IN MID-IR BIOSIGNATURE SEARCHES

November 2025

Exoclimes VII, poster

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Université de Montréal, Canada

July 2025

IAA Seminar Series, talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

November 2024

Biennial European Astrobiology Conference, poster

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

La Palma, Spain

May 2023

Exoplanets & Habitability Seminar Series, invited talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Zurich, Switzerland (online)

EuropaNet Science Congress, talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

March 2023

MPIA-APEx Exocoffee, invited talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Granada, Spain

September 2022

Latsis Origins of Life Symposium, talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Heidelberg, Germany (online)

September 2022

CHAMELEON retreat, invited talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Zurich, Switzerland

September 2022

Danish Annual Astronomy Meeting, talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Copenhagen, Denmark

September 2022

Astrobiology Science Conference, talk

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Fredericia, Denmark

May 2022

Exoplanets IV, poster

IS OZONE A RELIABLE PROXY FOR MOLECULAR OXYGEN?

Las Vegas, Nevada, USA

May 2022

Cambridge Exoplanet Seminar, invited talk

LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS

June 2021

Annual Danish Astronomy Meeting, talk

LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS

Online

STScI Exoplanets, Star and Planet Formation Seminar, invited talk

LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS

May 2021

Valparaiso University Physics & Astronomy Colloquium, invited talk

LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS

Valparaiso University, Valparaiso, Indiana,

USA (online)

March 2021

AAS Winter Meeting, talk

LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS

Online

MIT Exoplanet Tea, invited talk

LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS

MIT, Cambridge, Massachusetts, USA

(online)

October 2020

Exoplanets III, talk

LIFE AFTER (STELLAR) DEATH: ATMOSPHERES AND BIOSIGNATURES OF EARTH-LIKE PLANETS ORBITING IN THE

Heidelberg, Germany (online)

HABITABLE ZONES OF WHITE DWARFS

July 2020

AAS Winter Meeting, dissertation talk

PLANETARY HABITABILITY AND BIOSIGNATURES THROUGHOUT STELLAR EVOLUTION

Honolulu, Hawai'i, USA

January 2020

Extreme Solar Systems IV, poster

DYING TO LIVE: POST-MAIN SEQUENCE HABITABILITY

Reykjavík, Iceland

August 2019

Exoclimes V, poster	<i>University of Oxford, Oxford, UK</i>
DYING TO LIVE: POST-MAIN SEQUENCE HABITABILITY	<i>August 2019</i>
Astrobiology Graduate Conference, talk	<i>Salt Lake City, Utah, USA</i>
ATMOSPHERES AND UV ENVIRONMENTS OF PLANETS THROUGHOUT POST-MAIN SEQUENCE EVOLUTION	<i>July 2019</i>
Emerging Researchers in Exoplanet Science Symposium, talk	<i>Cornell University, Ithaca, New York, USA</i>
ATMOSPHERES AND UV ENVIRONMENTS OF PLANETS THROUGHOUT POST-MAIN SEQUENCE EVOLUTION	<i>June 2019</i>
AAS Winter Meeting, talk	<i>Seattle, Washington, USA</i>
HABITABILITY OF POST-MAIN SEQUENCE PLANETARY SYSTEMS	<i>January 2019</i>
Planetary Lunch Talk Series, talk	<i>Cornell University, Ithaca, New York, USA</i>
LIFE AFTER (STELLAR) DEATH: HABITABILITY AROUND WHITE DWARFS	<i>August 2018</i>
Graduate Student/Post-Doctorate Seminar, talk	<i>Cornell University, Ithaca, New York, USA</i>
DYING TO LIVE: POST-MAIN SEQUENCE HABITABILITY	<i>August 2018</i>
Cool Stars 20, poster	<i>Boston, Massachusetts, USA</i>
ATMOSPHERES AND UV GROUND ENVIRONMENT FOR PLANETS ORBITING RED GIANTS	<i>August 2018</i>
University of St Andrews, invited talk	<i>University of St Andrews, St Andrews, UK</i>
UV SURFACE ENVIRONMENTS AND ATMOSPHERES OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	<i>July 2018</i>
University of Edinburgh, invited talk	<i>University of Edinburgh, Edinburgh, UK</i>
UV SURFACE ENVIRONMENTS AND ATMOSPHERES OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	<i>July 2018</i>
Exoplanets II, poster	<i>Cambridge University, Cambridge, UK</i>
UV SURFACE ENVIRONMENTS AND ATMOSPHERES OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	<i>July 2018</i>
Graduate Student/Post Doctorate Seminar, talk	<i>Cornell University, Ithaca, New York, USA</i>
DO YOU BELIEVE IN LIFE AFTER (STELLAR) DEATH?: WHITE DWARF HABITABILITY	<i>June 2018</i>
Emerging Researchers in Exoplanet Science Symposium, poster	<i>Pennsylvania State University, State College, Pennsylvania, USA</i>
ATMOSPHERES AND UV GROUND ENVIRONMENT FOR PLANETS ORBITING RED GIANTS	<i>June 2018</i>
Emerging Researchers in Exoplanet Science Symposium, talk	<i>Pennsylvania State University, State College, Pennsylvania, USA</i>
BIOSIGNATURES AND UV ENVIRONMENTS OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	<i>June 2017</i>
Astrobiology Graduate Conference, talk	<i>Charlottesville, Virginia, USA</i>
BIOSIGNATURES AND UV ENVIRONMENTS OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	<i>June 2017</i>
Astrobiology Science Conference, poster	<i>Mesa, Arizona, USA</i>
BIOSIGNATURES AND UV ENVIRONMENTS OF EARTH-LIKE PLANETS ORBITING WHITE DWARFS	<i>April 2017</i>
Astrobiology Science Conference, poster	<i>Chicago, Illinois, USA</i>
AGE ROTATION-ACTIVITY RELATIONSHIP OF KEPLER FIELD STARS	<i>June 2015</i>
Emerging Researchers in Exoplanet Science Symposium, poster	<i>Pennsylvania State University, State College, Pennsylvania, USA</i>
AGE ROTATION-ACTIVITY RELATIONSHIP OF KEPLER FIELD STARS	<i>May 2015</i>
South Carolina Academy of Science Conference, talk	<i>Columbia, South Carolina, USA</i>
DIRECT IMAGING DISCOVERY OF A 'SUPER-JUPITER' AROUND A LATE B-TYPE STAR	<i>April 2013</i>
AAS Winter Meeting, poster	<i>Long Beach, California, USA</i>
THE SUBARU SEEDS IMAGING SEARCH FOR EXOPLANETS AROUND HIGH-MASS STARS	<i>January 2013</i>
AAS Winter Meeting, poster	<i>Austin, TX, USA</i>
THE SUBARU SEEDS IMAGING SEARCH FOR EXOPLANETS AROUND HIGH-MASS STARS	<i>January 2012</i>

Teaching

Teaching Assistant: From New Worlds to Black Holes

LECTURER: DR LISA KALTENEGGER

Team of 6 teaching assistants, total class ~200 students, recitation sections: ~60 students

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

Cornell University, Ithaca, NY, USA

Fall 2015 (Head TA), 2018

Teaching Assistant: Our Solar System

LECTURERS: DR STEVE SQUYRES AND PHIL NICHOLSON

Team of 6 teaching assistants, total class ~250 students, recitation sections: ~40 students

- 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

Fall 2014

~30 students

- 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

Teaching Assistant: Introductory Astronomy Lab

LAB MANAGER: CHRISTOPHER TRUE

College of Charleston, SC USA

Fall 2010-Spring 2011

~40 students

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

Physics Lab Manager's Assistant

LAB MANAGER: KATHLEEN LOW

College of Charleston, SC USA

Fall 2009-Spring 2013

Labs per week: ~10, students tutored each week: 5-10

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

Selected Outreach

Kvinder i Fysik (English: Woman in Physics)

BOARD MEMBER

Denmark

October 2021-2023

~10 board members total

- Representative of Denmark's women in physics society
- Attend board meetings and assist in decisions for women in physics events
- Coordinated social media posts highlighting women in physics
- Helped organize film series at Copenhagen theater to showcase women in science

Astronomy on Tap - Copenhagen chapter

ORGANIZING TEAM/SPEAKER

Copenhagen, Denmark

2021-2022

Team of ~10 organizers, ~6 events per year, ~40 attendees per event, typically ages 20-40

- 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

WORKSHOP DESIGNER/ORGANIZER

Cornell University, Ithaca, NY, USA

2015-2020

Team of ~10 volunteers, ~40 attendees yearly, ages 12-16

- 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

Team of ~10 trainers, weekly training sessions during academic year, ~150 trainees total for lectures, ~10-15 trainees for individual small group training

- 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

Team of ~20 volunteers, ~2-4 questions answered per month

- 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

Team of ~15 volunteers, ~150-200 attendees yearly of all ages

- 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

Team of ~10 volunteers, ~20 students yearly, ages 14-18

- 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

Team of ~15 volunteers, ~6 events per year, ~100-200 attendees per event of all ages

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

Astronomy Graduate Network

Cornell University, Ithaca, NY, USA

FALL 2014 - SPRING 2015 (VICE PRESIDENT), FALL 2015 - SPRING 2016 (TREASURER)

2013-present

Total members: ~30

- Organized meetings and social events to foster community in the astronomy department
- Handled organization finances and wrote yearly budgets
- Part of Cornell's Ask an Astronomer Team answering weekly questions from the general public
- Volunteered at local schools to teach about careers in astronomy and STEM

Computer Skills

Programming Languages Expert with Python, proficient with IDL and Bash, comfortable with Fortran and HTML

Operating Systems Skilled with Linux, Windows, and MAC OS X

Tools and Systems Expert with LaTeX and Mathematica, familiar with ArcGIS

Academic Service

Organizer

Instituto de Astrofísica de Andalucía

IAA SEMINAR SERIES

June 2025 - present

SOC

Fredericia, Denmark

ANNUAL DANISH ASTRONOMY MEETING

June 2023

Organizer

Technical University of Denmark

ASTRONOMY & ASTROPHYSICS SEMINAR

September 2021 - June 2023

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	
<i>Nature Astronomy</i>	
Reviewer	
<i>Astronomy & Astrophysics</i>	
Reviewer	
<i>Royal Society Open Science, Astrophysical Journal</i>	