

CURRICULUM VITAE

Dominic Oddo

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EDUCATION

University of New Mexico, Albuquerque, NM

Aug. 2020 – present

Pursuing a PhD in Physics w/ concentration in Astrophysics

Cumulative GPA: 4.043

Case Western Reserve University, Cleveland, OH

Aug. 2016 - May 2020

Graduated with B.S. in Physics and Secondary major in Astronomy

Cumulative GPA: 3.41

OBJECTIVE

I am working towards my PhD in Physics with Concentration in Astrophysics at the University of New Mexico in Albuquerque, New Mexico.

PAST RESEARCH EXPERIENCE

Case Western Reserve University – Research Assistant

(Fall 2019 – Spring 2020)

Optimization of direct-imaging survey strategies for max exoplanet yield with Dr. Benjamin Monreal

- Developed completeness calculations for terrestrial planets orbiting various stellar types
- Completed time-optimization calculations for max first-observation yield
- Researching optimal second or third observation strategies

Case Western Reserve University – Research Assistant

(Apr. 2019 – Aug. 2020)

Exoplanet simulations for ground-based telescopes with Dr. Benjamin Monreal

- Modeled the effects of Earth's atmosphere on the point spread function of a ground telescope
- Calculated the observation time required to resolve terrestrial exoplanets
- Used existing Python packages to create end-to-end mission simulations

Rochester Institute of Technology – NSF REU

(Summer 2018)

Earth-like exoplanet yield for space-based LUVOIR mission with Dr. Don Figer

- Simulated terrestrial planets orbiting nearby AFGKM stars for injection and recovery
- Calculated observing completeness for the set of nearby stars using Monte Carlo techniques
- Calculated metrics such as SNR and required exposure time to resolve targets

CURRENT RESEARCH

University of New Mexico – Research Assistant

(Fall 2020 – present)

*Finding the occurrence rate of circumbinary planets (CBPs) in the TESS dataset

- Finding physical properties of stars in binaries from photometric/SED fitting.
- Building methods to detect single- or multi-transit events in TESS light curves.
- Checking validity of found CBP candidates with statistical validation.

Radial velocity follow-up of a multi-planet TESS Object of Interest (TOI) with gap between planets

- Most multis are dynamically packed, but this TOI is not, according to TESS observations
- CFHT SPIRou instrument awarded time for RV characterization
- Fitting Keplerian orbit to RV curve, more data necessary

Characterizing small planets from TESS with CHEOPS observations

- Combined NASA TESS and ESA CHEOPS observations of five systems
- Jointly fitted transit models to light curves to obtain precise orbital and physical parameters
- Estimated precise planet radii bordering radius gap

PUBLICATIONS/TALKS

Research-contributed talk: AAS Meeting 242: Albuquerque, NM, Jun. 2023

D. Oddo*, D. Dragomir (2023). “Probing the limits of planet formation through the demographics of circumbinary planets”

Invited Seminar speaker: TESS Science Talk Series, Boston, MA, Mar. 2023

“Characterizing a set of small planets bordering the radius valley with TESS and CHEOPS observations.”

Invited Seminar speaker: Boston University Center for Space Physics, Boston, MA, Mar. 2023

“An exploration of the radius valley & a comparison of NASA TESS and ESA CHEOPS.”

First-author publication: D. Oddo*, D. Dragomir, A. Brandeker, et al. (2022). “Characterizing a set of small planets bordering the radius valley with TESS and CHEOPS observations.”

<https://iopscience.iop.org/article/10.3847/1538-3881/acb4e3/pdf>

Publication (submitted): M. R. Zapatero Osorio, S. Wang, **D. Oddo**, et al. (2022). “A sub-Neptune orbiting a slow-rotating K0V dwarf star.”

Poster Presentation: AAS Exoplanets IV Conference, Las Vegas, NV, May 2022

D. Oddo, D. Dragomir, M. Harris, N. Crouzet. “Characterizing a set of small planet candidates bordering the radius valley with TESS and CHEOPS observations.”

<https://submissions.mirasmart.com/ExoplanetsIV/itinerary/PresentationDetail.aspx?evdid=230>

Publication: Barragan, O., et al. (August, 2022). “The young HD 73583 (TOI-560) planetary system: Two 10- M_{\oplus} mini-Neptunes transiting a 750-Myr-old, bright, and active K dwarf.”

<https://academic.oup.com/mnras/article/514/2/1606/6548902>

Oral Presentation: TESS Science Conference II, Virtual, Aug. 2021

Oddo, D., Dragomir, D., Harris, M., Crouzet, N. (2021). “Characterizing small planet candidates from TESS with CHEOPS observations.”

Publication: Monreal, B., **Oddo, D.**, Rodriguez, C. (2019). “WAET: low-cost ground based telescopes for accelerated exoplanet direct imaging.” *ASTRO2020 APC Whitepaper*.

<https://arxiv.org/abs/1907.04897>

Poster: AAS Meeting 233, Seattle, WA, Jan. 2019

Oddo, D. “Simulating the earth-like exoplanet yield of the NASA LUVOIR ‘A’ architecture direct-imaging mission.”

Oral Presentation: RIT Undergraduate Research Symposium, Rochester, NY, July 2019

Oddo, D., Figer, D. “Simulating the earth-like exoplanet yield of the NASA LUVOIR ‘A’ architecture direct-imaging mission.”

PROFESSIONAL ACTIVITIES

2022 Sagan Exoplanet Summer Workshop: Exoplanet Science in the Gaia Era, Pasadena, CA
Workshop detailing the effective use of Gaia data in exoplanet science.

AAS Astronomy Ambassador Program, AAS 239th Meeting, Salt Lake City, UT (virtual)
Workshop for early-career astronomers interested in public engagement.

Time Allocation for CFHT-SPIRou spectropolarimeter, Mauna Kea, HI
2021B: ~30 hrs for “A deeper look at the architecture of multi-planet systems” (21BC06)
2022B: ~25 hrs for “Determining the masses of a dense inner planet and sub-Neptunian outer planet (22BC10+22BC97)

TESS Candidate Vetting, Albuquerque, NM
Examining light curves from TESS data pipeline outputs to determine outcome

Case Western Reserve University, Cleveland, OH
Women in Physics and Astronomy Club, executive member, 2018 – 2020
Physics and Astronomy Club, member, 2017 – 2020

American Astronomical Society, member
Attended AAS meeting 233 in January 2019 + AAS meeting 242 in June 2023

American Physical Society, member

INVOLVEMENT AND LEADERSHIP ACTIVITIES

University of New Mexico, Albuquerque, NM
P&A Graduate Student Association, Communications Officer 2021 – 2022

- Responsible for creating content to disseminate to fellow graduate students
- Upkeep of website, monthly newsletter, social media, and event announcements

P&A Graduate Student Association, UNM GPSA Representative 2020 – 2021

- Served as departmental representative to campus-wide Graduate and Professional Student Association Council
- Advocated for grad students to receive COVID-19 relief funding from UNM
- Supported UNM graduate student union for better pay and benefits to grad students

Case Western Reserve University, Cleveland, OH
Residence Life, residential assistant 2017 – 2020

- Foster development of floors of ~35 first-year students for three consecutive years
- Promote resident well-being through community-building strategies
- Organize and promote floor-specific programming to engage with Cleveland community

CWRU Feminist Collective, secretary 2018 – 2020

- Advocate for gender equity and inclusion
- Organize and promote events on campus
- Record general body meeting minutes

CWRU Women in Physics and Astronomy, co-founder 2019 – 2020

- Formed to promote and support women and gender non-conforming individuals in Physics and Astronomy departments at CWRU

- Created social support network and advocated for gender equality in these depts.
 - Organized professional development workshops and women-led science talks
- Varsity Track and Field, athlete, co-captain 2016 - 2020
- Provided leadership and organization as team captain during junior and senior years
- National Residence Hall Honorary, Donald J. Kamalsky Chapter, member 2019
- Advanced pillars of service and recognition in residence life
 - Participated in community service opportunities
 - Recognized outstanding work by campus community members

External organizations

- Know Your Neighbors CWRU, co-founder 2020 – 2022
- Co-founded group of Cleveland community residents and CWRU students dedicated to bridging the divide between CWRU campus community and local neighborhoods
 - Developed events both virtually and in-person to bring students and residents together
 - Advocated university to include local resident perspective in decision-making
- Right to Health Action, Regional Organizer 2020 – 2022
- Grassroots organization of thousands of activists nationwide working to end the COVID-19 pandemic and prevent future ones from ever occurring
 - Regional organizer duties include building state teams in the Southwest and providing training and support to State Captains and state teams

SKILLS

Lab skills

Analog + digital electronics
Experience w/ cryogenics
2D Hall Effect/muon decay

Software

Mathematica
Origin
GitHub

Coding Languages

Python - Strong
Matlab - Proficient
Java – Competent