Igor Z. Palubski

(641) 814 6480 • ipalubsk@uci.edu • ipalubski.github.io
https://github.com/ipalubski

Education

University of California, Irvine — **Irvine, CA**
Ph.D in Physics (Computational) — *Expected Graduation: March 2023*

Iowa State University — **Ames, IA**
B.S in Physics (with minors in Math and Astronomy) — *Awarded 2017*

Programming Languages: Python • C • Matlab • Fortran • Java • JavaScript
Familiar with: Linux Systems • Git
Natural Languages: English (fluent) • Polish (fluent)
Related Coursework: Two graduate courses in Machine Learning
Honors: Sagan Exoplanet Summer Workshop Travel Grant 2019 • Gene Ruby Scholarship - May 2015, 2016 • Dean's List - 2014, 2016

Software and Data Analysis Experience

University of California, Irvine - Graduate Student Researcher — **Irvine, CA**
Astrophysics Theory — *November 2020 - Present*
Develop and analyze cosmological, hydrodynamical simulations for Dark Matter studies.

• Developed a state-of-the-art statistical model for dark matter interactions in galaxies and implemented several new functionalities in an existing hydrodynamical physics C code, including an evolving baryon gravitational potential.
• Created a set of analysis tools in Python for large hydrodynamical data sets from galaxy simulations and model verification.

Shields Center for Exoplanet Climate and Interdisciplinary Education — **Irvine, CA**
Atmospheric Physics — *August 2018 - November 2020*
Extrasolar planet climate studies using a hierarchy of numerical models of varying complexity.

• Explored the effects of orbital dynamics on the habitability of Extrasolar planets by implementing a parallelized 1-Dimensional Energy Balance Model in Matlab for large parameter space scans on supercomputers. Results show that a significant habitable zone is present even at high orbital eccentricities.
• Wrote a fortran script for creating climatic initial conditions for synchronously rotating planets of desired spatial resolution for the Global Circulation Models — a set of sophisticated 3D hydrodynamical climate models.

Communication Skills

Publications

- Gravothermal evolution of Self-Interacting Dark Matter Halos with resonating cross sections. (in-prep)
- Gravothermal Collapse - Differences in N-body Self-Interacting Dark Matter Implementations and Resolution Effects (in-review)
- The Eccentric Habitable Zone: Habitability and Water Loss Limits on Eccentric Planets link
- Red-dwarf Habitability Recipe, August Publications issue of Sky and Telescope, Vol. 138, Issue 2, pg. 34-40. link
- Global Energy Budgets for Terrestrial Extrasolar Planets link
- Imaging the Localized Plasmon Resonance Modes in Graphene Nanoribbons link

Talks and Poster Presentations

- Habitability and Water Loss Limits on Eccentric Planets Orbiting Main-Sequence Stars, ExSoCal 2020 and American Astronomical Society/Division for Planetary Sciences Meeting October 2020 (**Talks**)
- Temporal Habitability and Water Loss Limits on Eccentric Planets, Exoclimes V, August 2019 and Sagan Exoplanet Summer Workshop, July 2019. (**Posters**)
- Eccentricity Thresholds for Planetary Deglaciation at Varying Obliquity, KITP Conference: "Planet-Star Connections in the Era of TESS and Gaia", May 2019 and American Astronomical Society, AAS Meeting 233, id.247.24, January 2019 (**Posters**)

Interests

- Aquatic activities: scuba diving, snorkeling, underwater photography, kayaking; history and learning new things