

Igor Z. Palubski

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<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 minor 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 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 data analysis.
- ***Shields Center for Exoplanet Climate and Interdisciplinary Education*** **Irvine, CA**
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

- **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**)

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](#)

Interests

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