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: December 2022*
- **Iowa State University** — **Ames, IA**
  B.S in Physics — *Awarded 2017*

Programming Languages: Python • C • Matlab • Fortran • Java
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.

  Irvine, CA
  Shields Center for Exoplanet Climate and Interdisciplinary Education — *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**)
- **Other**
  - 5 years of experience teaching undergraduate Physics courses, 3 years of mentoring experience of graduate and undergraduate group members.

Publications

- 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