Evan Frangipane

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Summary

Recent Ph.D. in Theoretical Physics transitioning into data science and analytics. Skilled in Python (Pandas, NumPy, SciPy, Matplotlib) and SQL, with expertise in statistical modeling, data visualization, and advanced mathematics. Proven ability to extract actionable insights from complex datasets using techniques such as hypothesis testing and regression analysis. Experienced in leveraging cloud-based tools like Kubernetes to process large-scale data efficiently. Known for clear communication of technical concepts and collaborative problem-solving in interdisciplinary teams.

Education

Ph.D. in Physics *University of California, Santa Cruz* **Santa Cruz, CA** *2018-2024*

B.A. in Physics *University of California, Berkeley* **Berkeley, CA** *2014-2018*

Employment

Graduate Student Researcher, *University of California, Santa Cruz* *2018 - 2024*

- Analyzed large-scale numerical datasets using Python and advanced statistical methods, resulting in 5 peer-reviewed publications
- Conducted simulations with adaptive algorithms and applied data processing techniques to model complex physical phenomena
- Collaborated in interdisciplinary teams to test hypotheses, generate insights, and present findings through visualizations and written reports

Teaching Assistant, *University of California, Santa Cruz* *2018 - 2024*

- Taught Python-based data analysis, including error propagation, linear regression, and chi-squared tests, to undergraduate students
- Provided one-on-one mentorship, fostering technical and analytical skill development

Undergraduate Researcher *Lawrence Berkeley National Laboratory* *2016 - 2018*

- Participated in detector development for the ATLAS collaboration
- Summer research fellowship in Genoa, Italy and CERN
- Contributed to detector development white paper for the High Luminosity Large Hadron Collider

Technical Projects

Numerical Simulation of Bubble Dynamics in Flat de Sitter Coordinates, *2024*

- Developed and executed a large-scale simulation in Python and C++ using adaptive mesh refinement and the method of lines
- Processed complex datasets generated from numerical simulations, applying data visualization techniques to identify key patterns
- Resulted in the first successful computation of this spacetime configuration, demonstrating advanced problem-solving in high-dimensional systems

Statistical Analysis of Primordial Black Hole Hypotheses, *2023*

- Performed large-scale microlensing simulations using Kubernetes, efficiently running parallelized jobs on a distributed computing cluster to save hundreds of hours
- Applied Anderson-Darling statistical tests to differentiate population distributions of Free-Floating Planets and Primordial Black Holes
- Leveraged Python (Pandas, NumPy, Matplotlib) for data cleaning, statistical analysis, and result visualization

Unitarity and the information problem in an explicit model of black hole evaporation *2021*

- Investigated quantum information and unitarity issues in black hole evaporation using the statistical mechanics formalism
- Applied advanced mathematics and algorithmic methods to design explicit evaporation models for hypothesis validation

Skills

- **Languages:** Python (NumPy, Pandas, SciPy, Matplotlib), SQL, Mathematica, C++
- **Statistical Analysis:** Hypothesis Testing, Regression, Confidence Levels, Probability Theory, A/B Testing
- **Mathematics:** Linear Algebra, Differential Equations, Complex Analysis
- **Tools:** LaTeX, Git, Docker, Kubernetes