# John Tamanas

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## Education

**Doctor of Philosophy (Ph.D.),** *Dept. of Physics, University of California - Santa Cruz, CA* — *March 2022*

- Awarded Master of Science in June 2018.
- **Thesis:** "Applications of Neural Probabilistic Modeling to High Energy and Astrophysics"

**Bachelors of Science (B.Sc.) - *summa cum laude*,** *Dept. of Physics and Astronomy, Dept. of Mathematics, School of Arts and Sciences Honors Program, Rutgers University, NJ* — *May 2016*

## Publications

**SBI + pMSSM:** Simulation Based Inference for Efficient Theory Space Sampling — *March 2022*
arXiv:2203.13403

- **Implemented** simulation-based inference algorithms in JAX and **applied** them to the problem of parameter space exploration resulting in a **10-100x runtime speed up** compared to classical methods.
- **Relevant skills and tools:** JAX, NumPy, Bayesian statistics
- **Presented at:** SUSY Conference, ATLAS Collaboration

**Via Machinae:** Searching for Stellar Streams using Unsupervised Machine Learning — *April 2021*
arXiv:2104.12789

- **Developed** an unsupervised **anomaly detection algorithm** using a mixture of domain expertise and neural density estimation to discover 100 new stellar streams in our galaxy.
- **Relevant skills and tools:** PyTorch, High Performance Computing, Computer Vision, SQL
- **Presented at:** Streams 21 Conference, ML4Jets Conference, LBL HEPML

**Spectre**: Fully probabilistic quasar continua predictions near Lyman-α — *June 2020*
arXiv:2006.00615

- **Built bleeding-edge generative models** for quasar continua and achieved state-of-the-art inference results while making predictions for the cosmological history of our universe.
- **Relevant skills and tools:** PyTorch, Kubernetes
- **Presented at:** NYU CPP, DESI-AI, ENIGMA Collaboration

## Mentoring and Leadership

- **Mentored** two Masters students in the University of Leiden astrophysics department resulting in two upcoming publications and a PhD program acceptance. — *2020-Pres.*
- **Instructed** over 2,000 introductory physics students. Received glowing reviews and a nomination for Teaching Assistant of the year. — *2016-2020*
- **Co-President** of the Rutgers Astronomical Society and award-winning **Vice President** of the Rutgers Society of Physics Students Chapter. — *2015-2016*