

# Austen Gabrielpillai

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## Professional Appointments

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### NASA Goddard Space Flight Center / Catholic University of America

Goddard, MD

#### RESEARCH ASSISTANT

Nov. 2020 - Present

- Under the supervision of James Rhoads and Sangeeta Malhotra, funded by the CRESST II cooperative agreement.
- Developing instrument simulation and data processing pipelines in Python and Jupyter Notebooks for Roman Space Telescope preparation.
- Optimizing and parallelizing code using multiprocessing and numba for running simulations on high-performance computing clusters.
- Investigating the time evolution of physical properties and their residuals between bijectively matched galaxies in two catalogs.

### Center for Computational Astrophysics / Flatiron Institute

New York, NY

#### RESEARCH ANALYST

Jul. 2018 - Aug. 2020

- Part- / full-time internship under the supervision of Rachel Somerville as a member of the Galaxy Formation group.
- Conducted galaxy formation research comparing Santa Cruz SAM and IllustrisTNG simulation outputs at  $z = 0$ .
- Developed a Python module for querying and loading partitions of a 180 GB simulation suite.
- Created a browser tool that enables real-time transformations of over 4 million simulated galaxies using Three.js and D3.js graphics.

### GSI Helmholtz Center for Heavy Ion Research

Darmstadt, DE

#### UNDERGRADUATE RESEARCH ASSISTANT

May 2016 - Aug. 2016

- Full-time internship under the supervision of Zoran Andelkovic and Wilfried Nörtershäuser as a member of the Atomic Physics group.
- Directed high-energy ion beams along 100 meters of beam line as part of a facility wide development project.

## Education

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### Rutgers University - New Brunswick

New Brunswick, NJ

#### MASTER OF INFORMATION

Sep. 2018 - May 2020

- Concentration in Data Science

### University of Illinois at Urbana-Champaign

Urbana, IL

#### BACHELOR OF SCIENCE IN ENGINEERING PHYSICS

Aug. 2013 - May 2017

- Concentration in Computer Science

## Skills

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<b>Programming</b>	Python (fluent), JavaScript (proficient), HTML & CSS (proficient), C (familiar), C++ (familiar), SQL (familiar)
<b>Software</b>	Jupyter Notebook, PyCharm, Microsoft Visual Studio, Adobe Photoshop, Github, Overleaf
<b>Linux Computing</b>	System Commands, Vim, Bash, Slurm, MPI

## Publications

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### FIRST AUTHOR

2022, *Galaxy Formation in the Santa Cruz semi-analytic model compared with IllustrisTNG – I. Galaxy scaling relations, dispersions, and residuals at  $z=0$*

In Review

**GABRIELPILLAI, AUSTEN**; SOMERVILLE, RACHEL S.; GENEL, SHY; RODRIGUEZ-GOMEZ, VICENTE; PANDYA, VIRAJ; YUNG, L. Y. AARON; HERNQUIST, LARS

arXiv:2111.03077

2022, *Galaxy Formation in the Santa Cruz semi-analytic model compared with IllustrisTNG – II. Galaxy scaling relations and residual evolution from  $z = 6$  to 0*

In Preparation

**GABRIELPILLAI, AUSTEN**; SOMERVILLE, RACHEL S.; GENEL, SHY; RODRIGUEZ-GOMEZ, VICENTE; DIEMER, BENEDIKT; PANDYA, VIRAJ; YUNG, L. Y. AARON; HERNQUIST, LARS

### CO-AUTHOR

2022, *Constraining cosmology with machine learning and galaxy clustering: the new CAMELS-SAM suite*

Submitted to ApJ

PEREZ, LUCIA A.; GENEL, SHY; SOMERVILLE, RACHEL S.; VILLAESCUSA-NAVARRO, FRANCISCO; **GABRIELPILLAI, AUSTEN**; ANGLÉS-ALCÁZAR, DANIEL; WANDELT; BENJAMIN D.; YUNG, L. Y. AARON

arXiv:2204.02408