

# Aaron Ouellette

## Curriculum Vitae

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### Education

- 2020– **Ph.D. in Physics**, GPA: 3.84/4, University of Illinois at Urbana-Champaign (UIUC).
- 2019–2020 **M.Sc. in Physics**, GPA: 4.0/4, Rensselaer Polytechnic Institute (RPI), Troy, NY.
- 2016–2019 **B.Sc. in Physics**, GPA: 3.96/4, RPI.

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### Research Interests

- **Cosmology and Astrophysics**
- **Data Analysis and Machine Learning**
- **Simulations and High Performance Computing**

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### Research Experience

- 2020– **Grad Student**, *UIUC*, Cosmology research under supervision of Matias Carrasco Kind.
- Using machine learning and high-performance computing to understand the evolution of galaxy clusters.
- June–Aug 2019 **SRP Intern**, *Argonne National Lab (ANL)*, Worked in the Cosmological Physics and Advanced Computing (CPAC) Group under supervision of Matthew Becker.
- Project focused on using compressed sensing to improve image inpainting algorithms for weak lensing analysis. Developed an inpainting algorithm based on sparse representation using wavelets.
- 2018–2020 **Undergrad and Masters student**, *RPI*, Worked under supervision of Heidi Newberg.
- Studied spiral structure in simulations of disk galaxies. Specifically focused on the effects of merging dwarf galaxies on the evolution of the spiral structure.

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### Work Experience

- May 2021– **Data Science Intern**, *Gies College of Business (UIUC)*.
- Working on a visualization project for the College of Agriculture. Languages and frameworks used: Python, Javascript, Flask, leaflet, d3.js

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## Teaching Experience

- 2021 **Private Tutoring**, Met weekly with a student to help with Modern Physics..
- 2021 **Grand T.A.**, PHYS 214/213: Quantum Physics and Thermal Physics, UIUC.
- 2021 **Grad T.A.**, PHYS 211: Intro Mechanics, UIUC.
- 2020 **Grad T.A.**, PHYS 212: Intro E&M, UIUC; General Physics, RPI.
- 2019 **Grad T.A.**, Intro E&M, Cosmology, RPI.
- 2019 **Undergrad T.A.**, Quantum Mechanics, RPI.
- 2018 **Undergrad T.A.**, Quantum Physics 1, RPI.
- 2017 **I-PERSIST Mentor**, *RPI*, Mentored first year physics majors.

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## Relevant Courses

- ASTR (UIUC) Computational Astrophysics
- ASTR 596 (UIUC) Seminar class on AI and Big Data in Astronomy
- PHYS 515 (UIUC) General Relativity
- ASTR 4960 (RPI) Galactic Structure
- PHYS 4810 (RPI) Computational Physics

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## Activities

- Penn State Summer School in Statistics for Astronomers XVI, Jun 1-5 2021.
- UIUC Astrofest, presented poster, Apr 23 2021.
- Michigan Cosmology Summer School, Jun 1-5 2020.
- ANL, presented poster, Aug 2019.
- ANL HEP Division Young Scientist Symposium, gave talk, Aug 2019.

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## Honors & Awards

- Travel Award to attend Penn State Astrostatistics Summer School and virtual SCMA VII conference
- Sigma Pi Sigma Honor Society membership
- Rensselaer Medal Scholarship

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## Computer Skills

- **OS**  
Linux, Windows
- **Languages**  
Python, C++, Matlab, Shell,  $\LaTeX$
- **Other**  
High-Performance Computing (MPI, HPC cluster usage), Tensorflow, Keras, PyTorch

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## Languages

- **English** Native
- **Russian** Mostly proficient