

Brian C. Ferrari

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🌐 <https://cavenfish.github.io/> • 🌐 <https://github.com/Cavenfish>
Citizenship: American (USA) and Brazilian (Dual-Citizen)

Education

Ph.D. Physics 2019–Present

University of Central Florida, Orlando, FL

B.S. Physics, minor in Mathematics 2014–2018

University of Central Florida, Orlando, FL

Awards

2020: – Conference Travel Award (UCF CRT52-324)

2019: – outReach for the Stars Award

– FL-AVS Short Course on Surface Science & Nano-materials 1st Place Award

2018: – Society of Physics Students Chapter Research Award

– Conference Travel Award (UCF CRT50-493)

2016: – Award for Outstanding Leadership in Physics Outreach at UCF

Professional Experience

Research History

Graduate Research Assistant 2019–Present

University of Central Florida, Orlando, FL

Undergraduate Research Assistant 2016–2018

University of Central Florida, Orlando, FL

Employment History

Graduate Teaching Assistant 2019–2020

University of Central Florida, Orlando, FL

Undergraduate Teaching Assistant 2017–2018

University of Central Florida, Orlando, FL

Machinist Apprentice 2016–2018

University of Central Florida, Orlando, FL

Leadership

Student Chapter Chairman 2019–Present

American Vacuum Society at the University of Central Florida

External Funding

| Period | Short Title | Amount |
|-----------|------------------------------------------|---------------------|
| 2020-2023 | NASA MUREP Fellowship | \$165,000.00 |
| 2020-2021 | FSGC Dissertation Improvement Fellowship | \$4,000.00 |
| 2017–2018 | SPS Chapter Research Grant | \$2,000.00 |
| | | Total: \$171,000.00 |

Publications

Citations: 12 ♦ h-index: 2 (April 2021 using Google Scholar).....

- [1] **Brian C. Ferarri**, K. Slavicinska, and C. J. Bennett. Role of suprathreshold chemistry on the evolution of carbon oxides and organics within interstellar and cometary ices. *Accounts of Chemical Research*, pages 1181–1189, 2021.
- [2] **Brian C. Ferarri** and C. J. Bennett. A computational investigation of the equilibrium geometries, energetics, vibrational frequencies, infrared intensities and raman activities of C_2O_y ($y = 3, 4$) species. *Molecular Physics*, page e1837404, 2020.
- [3] **Brian C. Ferarri** and C. J. Bennett. A comparison of medium-sized basis sets for the prediction of geometries, vibrational frequencies, infrared intensities and raman activities for water. *Journal of Physics: Conference Series*, 1290:012013, 2019.
- [4] **Brian C. Ferarri**. AutoGAMESS: A Python package for automation of GAMESS(US) Raman calculations. *Journal of Open Source Software*, 4(41):1612, 2019.
- [5] R. C. Fortenberry, D. Peters, **Brian C. Ferarri**, and C. J. Bennett. Rovibrational spectral analysis of CO_3 and C_2O_3 : Potential sources for O_2 observed in comet 67P/churyumov–gerasimenko. *The Astrophysical Journal*, 886(1):L10, 2019.

Conference Experience

Talks.....

- [1] **Brian C. Ferarri**, K. Slavicinska, and C. J. Bennett. Electron irradiation of astrophysical ice analogues: implications for the formations of biomolecules on Enceladus. In *Presented at Florida Chapter of American Vacuum Society Symposium*, 2020.

Workshops.....

- **Brian C. Ferrari**. Digital Logic Circuits Workshop. *UCF Raspberry Jam*, Oct 2018.
- **Brian C. Ferrari**. Introductory Python Coding Workshop. *UCF Raspberry Jam*, Oct 2018.

Posters.....

- [1] **Brian C. Ferarri**, Nestor F. Aguirre, and Chris J. Bennett. Experimental study of methane fragmentation and recombination from low energy electron interactions. In *Poster Session of the Florida Chapter of American Vacuum Society Symposium*, 2019.
- [2] **Brian C. Ferarri** and Chris J. Bennett. A comparison of medium-sized basis sets for the

prediction of geometries, vibrational frequencies, infrared intensities and raman activities of water. In *Poster Session of the 30th annual Conference on Computational Physics*, 2018.

- [3] **Brian C. Ferarri**, Katerina Slavicinska, and Chris J. Bennett. The search for novel carbon oxides within irradiated CO₂ ices: Potential new parent species for cometary volatiles. In *Poster Session of the 52nd meeting of the AAS Division of Planetary Sciences*, 2020.

Organizing

| | |
|---------------------------------------------------------------------------------------------------------------------|-----------------------|
| UCF AVS Astrochemistry Webinar | 2020 |
| https://ucf.avs.org/astrochem | <i>Webinar Series</i> |
| UCF Raspberry Jam | 2018 |
| https://sites.google.com/site/ucfraspberryjam/home | <i>Short Course</i> |

Computer Skills

Programming Languages

Advanced: Python

Intermediate: Julia, Fortran, C/C++

Novice: Mathematica, Shell Scripting, HTML, CSS/Less

Software

GAMESS – CP2K – VMD – MacMolPlt – SLURM – OpenMP – MPI – Inkscape – MASsoft – LabVIEW – SolidWorks – L^AT_EX

Teaching Assistant Experience

| Course | Role | Sections |
|------------------------------------------|-------------------------------|----------|
| ○ Physical Science | Grader | – 2 |
| ○ Physics 1 for Scientists and Engineers | Grader | – 2 |
| ○ Physics 2 for Scientists and Engineers | Studio/Scale-up TA | – 3 |
| | Lab and Recitation Instructor | – 1 |
| ○ College Physics 1 | Lab and Recitation Instructor | – 2 |
| ○ College Physics 2 | Studio/Scale-up TA | – 1 |
| | Grader | – 1 |

Outreach Activities

| Event | Role | # Times |
|--------------|-------------------------------------------------|---------|
| ○ STEM Day | Performed Physics “Super Powers” Demonstrations | – 5 |
| ○ Career Day | Performed Physics “Super Powers” Demonstrations | – 5 |

Mentoring

Undergraduate Students Mentored.....

Riley Havel (UCF), Remington Cantelas (UCF), Sarah Swiersz (UCF), Gabriel Martínez (Inter PR)