# Brian C. Ferrari

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🌐 https://cavenfish.github.io/  •  ⭘ https://github.com/Cavenfish

Citizenship: American 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: 7 ⋄ h-index: 2 (December 2020 using Google Scholar)...............................

[1] **Brian C. Ferarri** and Chris 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*, 2020.

[2] Ryan C. Fortenberry, Daniel Peters, **Brian C. Ferarri**, and Christopher 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.

[3] **Brian C. Ferarri**. AutoGAMESS: A Python package for automation of GAMESS(US) Raman calculations. *Journal of Open Source Software*, 4(41):1612, 2019.

[4] **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 for water. *Journal of Physics: Conference Series*, 1290:012013, 2019.

## Conference Experience

Talks............................................................................................................

[1] **Brian C. Ferarri**, Katerina Slavicinska, and Chris 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**, Katerina Slavicinska, and Chris J. Bennett. The search for novel carbon oxides within irradiated $CO_2$ ices: Potential new parent species for cometary volatiles. In *Poster Session of the 52nd meeting of the AAS Division of Planetary Sciences*, 2020.

[2] **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.

[3] **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.

## Organizing

**UCF AVS Astrochemistry Webinar**      **2020**
*https://ucf.avs.org/astrochem*      *Webinar Series*

**UCF Raspberry Jam**      **2018**
*https://sites.google.com/site/ucfraspberryjam/home*      *Short Course*

# 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 – LaTeX

# Teaching Assistant Experience

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

# Outreach Activities

| Event | Role | # Times |
|---|---|---|
| o STEM Day | Performed Physics "Super Powers" Demonstrations | — 5 |
| o 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)