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 suprathermal 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 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.

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
○ 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)