VICTOR CALDERON

victor.calderon@vanderbilt.edu ◇ http://vcalderon.me
6301 Stevenson Center Lane ◇ Office 6902 ◇ Nashville, TN 37240

EDUCATION

Vanderbilt University *June 2013 - Present*
Ph.D. Candidate in Physics with focus in Astronomy GPA *3.74 / 4.00*
Adviser: Andreas Berlind

Florida Institute of Technology *August 2009 - May 2013*
B.Sc. in Astronomy & Astrophysics Magna Cum Laude, GPA *3.75 / 4.00*
B.Sc. in Physics
B.Sc. in Mathematical Sciences

RESEARCH EXPERIENCE

Vanderbilt University June 2013 - Present
Graduate Student Researcher under Andreas Berlind *Nashville, TN*

- Construct algorithms that analyze astronomical data in order to better constrain the current models for the *galaxy-halo* connection
- Create synthetic catalogues that simulate the observed Universe in order to statistically constrain current models on galaxy formation and evolution.

Florida Institute of Technology August 2012 - August 2013
Undergraduate Researcher under Prof. Hakeem Oluseyi *Melbourne, FL*

- Development of astronomical templates relating observations of RR-Lyrae stars to physical parameters such as iron abundance, luminosity, and chemical composition of these stars.
- Use of Discrete Fourier Transforms (DFTs) and Principal Component Analysis (PCA) methods to get a better understanding of the physical properties of RR-Lyrae stars.

Massachusetts Institute of Technology June 2012 - August 2012
MSRP Summer Research Intern under Prof. Paulo Lozano *Cambridge, MA*

- Design and fabrication of an electrospray system capable of producing sub-micron glass droplets, ultimately enabling the manufacturing of high-power nano-structured emitters on planar surfaces.
- Development of mathematical models and algorithms to depict the physical characteristics of borosilicate glass, such as viscosity, volumetric flux, and thermal expansion, among other.

Florida Institute of Technology January 2012 - May 2012
Undergraduate Researcher under Prof. Matt Wood *Melbourne, FL*

- Study of cataclysmic variable stars in binary systems by detection of dwarf-nova outbursts and super-outbursts from these systems.
- Use of Discrete Fourier Transform (DFT) methods in the analysis of short-cadence light curves.

Florida Institute of Technology August 2011 - May 2013
Undergraduate Researcher under Prof. Daniel Batcheldor *Melbourne, FL*

- Reverberation mapping of dusty tori in active galactic nuclei (AGN) with the purpose of furthering the current theoretical models of black holes by conducting global monitoring of Type 1 AGNs objects.
- Photometric observations of AGNs using observatories in Tucson, Arizona and Cerro Tololo, Chile.

· Measurements of the "light echo" as dusty tori respond to variations in the optical/ultraviolet continuum.

PUBLICATIONS: REFEREED, 1ST AND *N*-TH AUTHOR

1. **Calderon, Victor F.**, Berlind, Andreas A., Sinha, Manodeep *"Small- and Large-Scale Galactic Conformity in SDSS DR7"*, 2018, Monthly Notices of the Royal Astronomical Society, 480, 2, 20312045
2. Stark, David. V., Kannappan, Sheila J., et al. including **Calderon, Victor F.** *"The RESOLVE Survey Atomic Gas Census and Environmental Influences on Galaxy Gas Reservoirs"*, 2016, The Astrophysical Journal, 832, 126

PUBLICATIONS: IN PROGRESS AND SUBMITTED

1. **Calderon, Victor F.**, Berlind, Andreas A. *"Prediction of Galaxy Cluster and Group masses in SDSS DR7 via a machine learning approach"*, 2018, (*submitted to MNRAS*,)
2. **Calderon, Victor F.**, Berlind, Andreas A., Sinha, Manodeep *"Probing the Stellar Content of Galaxy Groups with Value-Added Group Catalogues in the SDSS DR7"*, 2018, (*submitted to MNRAS*)
3. Florez, Jonathan, Kannappan, Sheila J., et al. including **Calderon, Victor F.** *"Measuring the Properties of Void Galaxies in ECO using RESOLVE"*, (in prep.)
4. Guo, Yuhan, Berlind, Andreas A., **Calderon, Victor F.** *"The Shapes of Galaxy Groups in SDSS DR7"*, (in prep.)
5. Bonfield, Charles, Kannappan, S., Eckert, K., et al. including **Calderon, Victor F.** *"A Study of Galaxy Group Velocity Dispersion using Hierarchical Bayesian Modeling"*, (in prep.)

TECHNICAL STRENGTHS & SKILLS

Computer Languages	Python, LaTeX, C, Cython, Bash, scikit-learn, pandas, numpy, scipy, high-performance computing, Git, SQL, TravisCI, R Statistical Computing, Keras, Microsoft Word
Operating Systems	Unix/Linux, Windows, Mac OS
Languages	Spanish (native), English (fluent), German (conversational)

PRESENTATIONS & WORKSHOPS

Big Data Analysis in Astronomy - Machine Learning - Talk & Poster - *La Laguna, Tenerife, Spain* 2018
.Astronomy X Workshop -*Baltimore, MD* 2018
Sugar Rush 2018 Talk -*Shanghai, China* 2018
Center for Quantitative Science - Machine Learning & Statistics Workshop - *Nashville, TN* 2018
Vanderbilt Data Science Symposium - Talk and Poster -*Nashville, TN* 2018
Quantifying and Understanding the GalaxyHalo Connection Talk & Poster -*Santa Barbara, CA* 2017
SnowPAC 2016 Galaxy-Halo Connection Talk -*Salt Lake City, UT* 2016
AAS 227^{th} Winter Meeting -*Kissimmee, FL* 2016
Inclusive Astronomy 2015 -*Nashville, TN* 2015
AAS 225^{th} Winter Meeting -*Seattle, WA* 2015
School on Dark Energy and Galaxy Redshift Surveys -*Corfu, Greece* 2014
Summer School in Statistics for Astronomers *X* at Penn. State University -*State College, PA* 2014
SciCoder Workshop 2013 at New York University -*New York City, NY* 2013
National Collegiate Research Conference at Harvard University -*Cambridge, MA* 2013

NSF 2012 AGMUS Research Symposium -*San Juan, PR* 2012
27^{th} MIT Annual Summer Research Programs Poster Presentation -*Cambridge, MA* 2012

AWARDS

2nd Best Poster Award with $500 prize - Big Data Symposium - Vanderbilt University 2018
Summer Travel Research Award - Summer 2017 - Vanderbilt University 2017
Summer 2014 Research Award - Summer 2014 - Vanderbilt University 2014
Summer 2013 Research Award - Summer 2013 - Vanderbilt University 2013
Best Poster Presentation Award - NSF 2012 AGMUS Research Symposium 2012
Outstanding Senior in Astrophysics & Astronomy Award - Florida Inst. of Tech. 2012
Distinguished Student Scholar Award - Florida Inst. of Tech. 2011
Elected to Phi Kappa Phi (Florida Inst. of Tech.) 2011
Elected to Phi Eta Sigma (Florida Inst. of Tech.) 2010
Dean's List (Florida Inst. of Tech.) 2009 - 2013

HONOR SOCIETIES & ORGANIZATIONS

National Honor Society Phi Kappa Phi ($\Phi K\Phi$)
National Honor Society Phi Eta Sigma ($\Phi H\Sigma$)
Physics Honor Society - Sigma Pi Sigma ($\Sigma\Pi\Sigma$)
Society of Physics Students (SPS)

ACADEMIC SERVICE

Instructor of the Vanderbilt-Fisk Computational Bootcamp Fall 2018
Maintainer of Vanderbilt Astro - Starting Grad School Guide 2018 - present
SciCoder 2017 - Local Organizing Committee member - Vanderbilt University 2017
Co-leader of the Vanderbilt Computational Workshop 2017
MIT Summer Research Program Review Committee 2016, 2017, 2018
Web Admin for the Vanderbilt Astronomy Group website 2015 - present
Host for Vanderbilt Astronomy Journal Club 2015 - present

ACADEMIC REFERENCES

Andreas A. Berlind, *Associate Professor of Astronomy*
The Vanderbilt University, Nashville, TN
a.berlind@vanderbilt.edu
Phone: +1-(615)-343-2184

Kelly Holley-Bockelmann, *Associate Professor of Astronomy*
The Vanderbilt University, Nashville, TN
k.holley@vanderbilt.edu
Phone: +1-(615)-343-2153

Frank van den Bosch, *Associate Professor of Astrophysics*
Yale University, New Haven, CT
frank.vandenbosch@yale.edu
Phone: +1-(203)-432-0196