

Will Waldron | Curriculum Vitae

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🐙 GitHub

in LinkedIn

EDUCATION

University of Alabama in Huntsville

Doctorate of Philosophy in Physics

Huntsville, AL

August 2016 - August 2022

University of Alabama in Huntsville

Master of Science in Physics

Huntsville, AL

August 2014 - May 2016

Harding University

Bachelor of Science in Physics and Mathematics

Searcy, AR

August 2010 - May 2014

KEY SKILLS

- *Physics Specialties:* Infrared Sensors; Radiometry; Galaxies in Clusters
- *Technical Skills:* Data Analysis; High Dimensional, Non-Parametric Statistics; Image Processing
- *Computer Languages:* C++; Fortran; LaTeX; Mathematica; MATLAB; Python (preferred)
- *Operating Systems:* CentOS; Linux Mint; Ubuntu; Windows
- *Other Skills:* Atlassian Products

ACADEMIC PROJECTS

PhD Research: Star Formation in the Tail of ESO 137-001

August 2016 - December 2022

- Seeking to understand star formation in tails of galaxies that have spectacular RPS tails
- Utilize image reduction techniques to identify sources in Hubble Space Telescope (HST) images of galaxy tail
- Identified error in the data reduction technique of a Yale collaborator
- Assist new PhD students in their studies

Recent Research

August 2022 - Present

- Generalized my PhD galaxy reduction pipeline to improve quality and turn-around time of *Hubble* images.

EXPERIENCE

University of Alabama in Huntsville

Lecturer

Huntsville, AL

August 2024 - Present

- Teach introductory undergraduate Physics courses including University Physics I & II

Harding University*Assistant Professor***Searcy, AR***August 2019 - May 2024*

- Teach introductory and advanced undergraduate Physics courses including:
 - **Introductory Astronomy**
 - **College Physics I & II**
 - **Modern Physics**
 - **Analytical Mechanics**
 - **Electromagnetic Theory**
 - **Senior Physics Capstone I (Applications & Experimentation)**
- Assist with liberal arts renewal in the natural sciences.
- Help with vision and planning for Harding's Gilliam Biological Research Station.
- Work with colleagues to teach them Python.

Dynetics, Inc.*Research Analyst***Huntsville, AL***April 2015 - July 2019*

- Created software solutions to explore and analyze data using high-dimensional, non-parametric statistics
 - **Presented software at the Naval Applications in Machine Learning workshop**
 - **Software is now receiving cross-branch recognition**
- Studied classifiers (including deep neural networks) and their effectiveness
- Tested and modeled infrared systems including the radiometry from source to sensor
 - **Worked on a software team to create a toolkit to compare imagery**
 - **Utilized image processing techniques for infrared data post-processing**
 - **Assisted in design of infrared, radiometric simulations**

Harding University*Research Assistant***Searcy, AR***August 2013 - August 2014*

- Assisted Dr. David Burks during his authorship of *Camaraderie*
 - **Contacted and helped integrate input from third party contributors such as alumni and faculty**
 - **Sifted through thousands of images in search of good fits for the book**
 - **Performed preliminary editing before sending copies to the editor**

Harding University*Student Association President***Searcy, AR***May 2012 - May 2013*

- Acted as the mediator between students and administration
- Instrumental in transition between Presidents Burks and McLarty by participating on the Transition Committee and reconciling campus unrest throughout the year
- Worked with a team to send students to Louisiana after Hurricane Isaac to aid in cleanup
- Spoke in chapel on multiple occasions as well as was a student lecturer during the 2012 Bible Lectureships

AWARDS AND ACHIEVEMENTS

- Harding University Trustees Scholar
- Dean's List at both schools at all levels
- Member of Omicron Delta Kappa, Alpha Chi and the American Studies Institute

CONFERENCES

- Naval Applications in Machine Learning 2019
 - Presented statistical software which I authored
 - Supplemented presentation of deep learning paper, “Characterizing Inter-Layer Functional Mappings of Deep Learning Models”
- SPIE Defense and Commercial Sensing 2019
 - Presented partial differential equation paper, “A Method for Solving 2D Nonlinear Partial Differential Equations Exemplified by the Heat-Diffusion Equation”
- Attended First Results from *James Webb Space Telescope (JWST)* Conference in December 2022

REFERENCES

- Steven Barber, Harding University, Engineering & Physics Department
 - 501-279-4512
 - sbarber@harding.edu
- Zane Gastineau, Harding University, Engineering & Physics Department Chair
 - 501-279-4365
 - zgastineau@harding.edu
- Michael Gutierrez
 - 620-218-3869
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- Donald Hulsey, Dynetics
 - 520-247-8399
 - dhulsey@mac.com
- Ming Sun, University of Alabama in Huntsville, Department of Physics & Astronomy
 - 256-824-2126
 - ming.sun@uah.edu

Publications

- Cramer, W. J. et al. “Spectacular Hubble Space Telescope Observations of the Coma Galaxy D100 and Star Formation in Its Ram Pressure-stripped Tail”. In: *ApJ* 870, 63 (Jan. 2019), p. 63. doi: 10.3847/1538-4357/aaefff. arXiv: 1811.04916 [astro-ph.GA].
- Laudari, S. et al. “ESO 137-002: a large spiral undergoing edge-on ram-pressure stripping with little star formation in the tail”. In: *MNRAS* 509.3 (Jan. 2022), pp. 3938–3956. doi: 10.1093/mnras/stab3280. arXiv: 2111.01821 [astro-ph.GA].
- Luo, R. et al. “Tracing the kinematics of the whole ram-pressure-stripped tails in ESO 137-001”. In: *MNRAS* 521.4 (June 2023), pp. 6266–6283. doi: 10.1093/mnras/stad1003. arXiv: 2212.03891 [astro-ph.GA].
- Sun, M., A. Boselli, et al. *Constraining star formation with the deepest HST images of M87*. HST Proposal. Cycle 30, ID. #17037. June 2022.
- Sun, M., R. Luo, and W. V. Waldron. *Tracing a hundred thousand kelvin gas in the ram pressure stripped clouds*. HST Proposal. Cycle 32, ID. #17817. July 2024.
- Waldron, W. “A Method for Solving 2D Nonlinear Partial Differential Equations Exemplified by the Heat-Diffusion Equation”. In: *Infrared Imaging Systems: Design, Analysis, Modeling, and Testing XXX*. SPIE, 2019.

- Waldron, W. "A Pipeline to Study *HST* ACS/WFC3 Data and Examples of its Applications". PhD thesis. University of Alabama in Huntsville, Aug. 2022.
- Waldron, W. et al. "HST viewing of spectacular star-forming trails behind ESO 137-001". In: *MNRAS* 522.1 (June 2023), pp. 173–194. doi: 10.1093/mnras/stad963. arXiv: 2302.07270 [astro-ph.GA].