

Thomas M. Boudreaux

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RESEARCH INTERESTS Computational astrophysics, stellar evolution, machine learning, pulsating hot sub-luminous B stars, chaotic systems.

EDUCATION Dartmouth College Hanover, NH
Master of Science — Astronomy May 2022 (expected)
Advisor: [Brian C. Chaboyer](#)
Secondary Advisor: [Elisabeth R. Newton](#)
Doctor of Philosophy — Astronomy Spring 2024 (expected)

High Point University High Point, NC
Bachelor of Science, summa cum laude — Computational Physics May 2019
Advisor: [Brad N. Barlow](#)

PUBLICATIONS

- Joseph A. Guidry, Zachary P. Vanderbosch, J. J. Hermes, Brad N. Barlow, Isaac D. Lopez, Thomas M. Boudreaux, Kyle A. Corcoran, Bart H. Dunlap, Keaton J. Bell, M. H. Montgomery, Tyler M. Heintz, D. E. Winget, Karen I. Winget, J. W. Kuehne., 2020, “[I Spy Transits and Pulsations: Empirical Variability in White Dwarfs Using Gaia and the Zwicky Transient Facility](#)”, *Astrophysical Journal*, **Submitted**
- Vos, J., Vučković, M., Chen, X., Han, Z., **Boudreaux, T. M.**, Barlow, B. N., Østensen, R., Németh, P., 2019, “[The orbital period — mass ratio relation of wide sdB+MS binaries and its application to the stability of RLOF.](#)”, *Monthly Notices of The Royal Astronomical Society*, **482**, 4592
- **Boudreaux, T. M.**, 2017, “[The applications of deep neural networks to sdBV classification](#)”, *Open Astronomy*, **26**, 258.
- **Boudreaux, T. M.**, Barlow, B. N., Fleming, S. W., Soto, A. V., Million, C., Reichart, D. E., Haislip, J. B., Linder, T. R., Moore, J. P., 2017. “[A search for rapidly pulsating hot subdwarf stars in the GALEX survey](#)”, *Astrophysical Journal*, **845**, 171.

PROCEEDINGS

- Vos, J., Vučković, M., Chen, X., Han, Z., **Boudreaux, T. M.**, Barlow, B. N., Østensen, R., Németh, P., 2019, “[Using wide hot subdwarf binaries to constrain Roche-lobe overflow models](#)”, *Contrib. Astron. Obs. Skalnaté Pleso*, **49**, 264

COMPUTING SKILLS

- *Programming Languages:*
 1. *Expert:* Python, C/C++
 2. *Comfortable:* Fortran 77/90/95, Arduino, PHP, JavaScript, Mathematica
 3. *Familiar:* LabView, Go, Rust
- *Web Backend Technologies:* Flask, MongoDB, MySQL, MariaDB
- *Misc:* Period04, Docker, GitHub, ZFS, LaTeX, Bash, Zsh

AWARDS & HONORS

- **The National Science Foundation**, 2019
Graduate Record Fellowship Program Honorable Mention
- **High Point University**, 2019
University Award for Highest Achievement
- **High Point University Honors Scholar Program**, 2019
All University Honors
- **The Barry Goldwater Scholarship and Excellence in Education Foundation**, 2018
Goldwater Scholar in Mathematics, Science, and Engineering
- **High Point University Department of Physics**, 2018
Endowed Scholarship
- **National Collegiate Honors Council**, 2018
Portz Scholarship
- **Sigma Xi, The Scientific Research Honors Society**, 2018
Elected Associate Member
- **Sigma Pi Sigma, National Physics Honor Society**, 2018
Elected Member
- **The Barry Goldwater Scholarship and Excellence in Education Foundation**, 2017
Honorable Mention for excellence in Mathematics, Science, and Engineering
- **High Point University**, 2015–2019
Presidential Scholarship
- **High Point University**, 2015–2019
Honors Scholar
- **High Point University**, 2015–2019
Dean's list

ORAL PRESENTATIONS

- **National Collegiate Honors Council Annual Meeting**, 2018, Boston, MA
“The Applications of Deep Neural Networks to sdBV Classification” [Invited]
- **North Carolina Astronomers Meeting**, 2017, Greensboro, NC
“The Applications of Deep Neural Networks to sdBV Classification”
- **Eighth Annual Meeting on Hot Subdwarfs and Related Objects**, 2017, Kraków, Poland
“The Applications of Deep Neural Networks to sdBV Classification”
- **High Point University Research and Creative Works Symposium**, 2017, High Point, NC
“A Virtual Survey of all known Hot Subdwarfs – searching for p-mode pulsations with GALEX”
- **Meeting of Astronomers in South Carolina**, 2017, Greenville, SC
“The Applications of Deep Neural Networks to Time Domain Astrophysics”
- **North Carolina Astronomers Meeting**, 2016, Greensboro, NC
“A Virtual Survey of all known Hot Subdwarfs – searching for p-mode pulsations with GALEX”

POSTER PRESENTATIONS

- 233rd Meeting of the American Astronomical Society, 2019, Seattle Washington
“[A Journey to Mars: HPUniverse Day and Its Impact on Young Minds and a Community.](#)”
- 233rd Meeting of the American Astronomical Society, 2019, Seattle Washington
“[Effects of the Primordial Binary Fraction on the Evolution of Globular Clusters.](#)”
- High Point University Research and Creative Works Symposium, 2018, High Point, NC
“Listening to the voices of Stars with Deep Neural Networks”
- 231st Meeting of the American Astronomical Society, 2018, Washington D.C.
“[Using Deep Learning to Analyze the Voices of Stars.](#)”
- North Carolina Academy of Sciences Annual Meeting, 2017, High Point, NC
“A Virtual Survey of all known Hot Subdwarfs – searching for p-mode pulsations with GALEX”
- High Point University Research and Creative Works Symposium, 2016, High Point, NC
“New Long Period Hot Subdwarfs from the Hobby-Eberly Telescope”
- 227th Meeting of the American Astronomical Society, 2016, Kissimmee, FL
“[New Long Period Hot Subdwarfs from the Hobby-Eberly Telescope](#)”

TEACHING EXPERIENCE

- Dartmouth College, 2020
Introductory Mechanics Teaching Assistant (*Phys 13*)
- Dartmouth College, 2020
Introductory Solar System Astronomy (*Astr 1*)

JOBS & INTERNSHIPS

- Harvard Smithsonian Astrophysical Observatory, 2018
Harvard SAO REU Student
- Space Telescope Science Institute, 2016
SASP Summer Intern
- High Point University, 2016
Student Instructor Calculus III

SOFTWARE

- All of my software can be found on my [GitHub](#) page.
- [mplEasyAnimate](#) — Simple and easy animation library for use with matplotlib.
 - [astroSynth](#) — Synthetic pulsating star light curve generation suite.
 - [pyBJD](#) — Python bindings for Ohio state UTC to BJD conversion. [Deprecated]
 - [vectorPy](#) — Python 3-vector package.

RESEARCH PROJECTS

- Modifying the Dartmouth Stellar Evolution Program to fully self consistently handel increased He abundance, 2020-
- The Ca II H&K Rotation-Activity Relation in 50 early-to-late type M-dwarfs, 2019-2020.
- Effects of the Primordial Binary Fraction on Globular Cluster Evolution, 2018
- Applications of Deep Learning to Classification of PTF Data, 2018
- Applications of Machine Learning to the Classification of Pulsating Stars, 2017–2018

- A Search for Rapidly Pulsating Hot Subdwarfs in the GALEX Survey, 2016–2017
- Orbital Solution Analysis of Long Period sdB+F/G/K Binaries, 2015–2016