Thomas M. Boudreaux

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RESEARCH INTERESTS

Computational astrophysics, stellar evolution, machine learning, pulsating hot subluminous 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

- **Boudreaux, T.M.**, Newton, E.R., Mondrik, N., Charbonneau, D., Irwin, J., 2021. "The Ca II H&K Rotation-Activity Relation in 53 mid-to-late type M-Dwarfs", *The Astrophysical Journal. In. Pres.*
- Guidry, J.A., Vanderbosch, Z.P., Hermes, J.J., Barlow, B.N., Lopez, I.D., **Boudreaux, T.M.**, Corcoran, K.A., Bell, K.J., Montgomery, M.H., Heintz, T.M. and Castanheira, B.G., 2021. I Spy Transits and Pulsations: Empirical Variability in White Dwarfs Using Gaia and the Zwicky Transient Facility. The Astrophysical Journal, 912(2), p.125.
- Vos, J., Vučkovič, M., Chen, X., Han, Z., **Boudreaux, T. M.**, Barlow, B. N., Østensen, R., Nèmeth, 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.

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

SELECT AWARDS & HONORS

- **The National Science Foundation**, 2019
  Graduate Record Fellowship Program Honorable Mention
- **The Barry Goldwater Scholarship and Excellence in Education Foundation**, 2018
  Goldwater Scholar in Mathematics, Science, and Engineering
- **National Collegiate Honors Council**, 2018
  Portz Scholarship
- **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

SELECT PRESENTATIONS

- **233rd Meeting of the American Astronomical Society**, 2019, Seattle Washington
  "Effects of the Primordial Binary Fraction on the Evolution of Globular Clusters."
- **National Collegiate Honors Council Annual Meeting**, 2018, Boston, MA
  "The Applications of Deep Neural Networks to sdBV Classification" [Invited]
- **231st Meeting of the American Astronomical Society**, 2018, Washington D.C.
  "Using Deep Learning to Analyze the Voices of Stars."
- **Eighth Annual Meeting on Hot Subdwarfs and Related Objects**, 2017, Krakòw, Poland
  "The Applications of Deep Neural Networks to sdBV Classification"
- **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 Solar System Astronomy Teaching Assistant (*Astr 1*)
- **Dartmouth College**, 2020
  Introductory Mechanics Teaching Assistant (*Phys 13*)

JOBS & INTERNSHIPS

- **Harvard Smithsonian Astrophysical Observatory**, 2018
  Harvard SAO REU Student
- **Space Telescope Science Institute**, 2016
  SASP Summer Intern

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.