

## Thomas M. Boudreaux

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### RESEARCH INTERESTS

Computational astrophysics, machine learning, pulsating hot subluminous B stars, chaotic systems, globular cluster dynamics.

### EDUCATION

Dartmouth College	Hanover, NH
<i>Master of Science</i> — Astronomy	May 2021 (expected)
<i>Doctor of Philosophy</i> – Astronomy	Spring 2024 (expected)
High Point University	High Point, NC
<i>Bachelor of Science, summa cum laude</i> — Computational Physics	May 2019
Advisor: <a href="#">Brad N. Barlow</a>	

### PUBLICATIONS

- 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.

### COMPUTING SKILLS

- *Programming Languages:*
  1. *Expert:* Python, C/C++
  2. *Comfortable:* MATLAB, Arduino, PHP, JavaScript
  3. *Familiar:* FORTRAN, LabView, Mathematica
- *Web Backend Technologies:* Flask, MongoDB, MySQL, Google App Engine
- *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](#)”

## **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
- **Encore Stage & Studio**, 2016-2017  
Technical Director
- **Encore Stage & Studio**, 2015-2016  
Assistant Technical Director

## **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**

- 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