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## EDUCATION

**2015 - present B.S.A. Astronomy and Physics, Polymathic Scholars Honors**

**The University of Texas at Austin**

Expected May 2019

Thesis Topic: *Falsifiability of the multiverse theory*

Advisor: **Professor Volker Bromm**

Current GPA: 4.0

## PEER-REVIEWED PUBLICATIONS

**Shen, Z.**, Diercke, A., Denker, C. 2018, *Astronomische Nachrichten*, in press, [arXiv: 1812.04404](https://arxiv.org/abs/1812.04404):  
 ‘Calibration of full-disk He I 10830 Å filtergrams of the Chromospheric Telescope’

Cannon, J., **Shen, Z.**, McQuinn, K. B. W. et al., 2018, *ApJ*, **864**, L14, [arXiv: 1808.07108](https://arxiv.org/abs/1808.07108):  
 ‘Delayed Stellar Mass Assembly in the Low Surface Brightness Dwarf Galaxy KDG215’

## RESEARCH INTERESTS

**Galaxy Evolution – Dark Matter in Dwarf Galaxies – Gravitational lensing**  
**Computational astrophysics**

## RESEARCH EXPERIENCE

**Star Formation History of KDG215**, Dr. Kristen McQuinn Aug 2017 - Present

- Construct color-magnitude diagrams of dwarf galaxies with resolved stellar populations
- Model star formation history with CMD fitting
- Manage the GitHub repository for the CMD fitting tool
- Uncovered the extremely delayed star formation in KDG215

**Leibniz Institute of Astrophysics Potsdam (AIP)**, Prof. Carsten Denker May 2018 - Aug 2018

- Funded by DAAD RISE summer internship
- Developed a data reduction pipeline for solar full-disk He I filtergrams
- Calibrated full-disk Doppler velocities with co-temporal high resolution spectrograph data

**McDonald Observatory Planet Search Program**, Dr. Michael Endl Oct 2016 - May 2018

- Operated the high-resolution Coude échelle spectrograph on the 2.7m Harlan J. Smith Telescope
- Measured radial velocity of planet search target stars and followed up K2 exoplanet targets

**Paul and Jane Meyer Observatory, Central Texas Astronomy Society** Aug 2016 - May 2017

- Obtained photometric time series and produced phase-folded light curves of two eclipsing binaries
- Placed novel radius constraint of  $0.41 R_{\odot}$  on transiting star
- Created operational manual for future observations
- Provided undergraduate students with telescope operation training

**Hobby-Eberly Dark Energy Experiment (HETDEX)**, Prof. Karl Gebhardt Aug 2016 - Dec 2016

- Detected Lyman- $\alpha$  galaxies in IFU spectra with Python image processing
- Discovered a previously unknown quasar

- Exploring the Universe with White Dwarf Stars**, Dr. Michael Montgomery Jan 2016 - May 2017
- Simulated nickel yield of Type II supernovae with MESA
  - Reduced time-series photometry data with IRAF and generated light curves for Fourier analysis

#### AWARDS, SCHOLARSHIPS, & HONORS

- 2017, 2018** UT Austin College of Natural Sciences Distinguished College Scholar
- 2018** Kevin E. Underhill Memorial Endowed Presidential Scholarship
- 2018** First place, Physics Department Open House Poster Competition  
Title: *‘Can Starbursts Flatten Mass Distribution in the Centers of Dwarf Galaxies?’*
- 2018** [Research Internship in Science and Engineering \(RISE\)](#),  
[German Academic Exchange Service \(DAAD\)](#)
- 2015-2018** [Polymathic Scholars Honors Program](#)

#### RESEARCH SKILLS

Python – IDL – Vim – Emacs – GitHub – DS9 – IRAF – MESA – LaTeX

#### CONFERENCE & POSTERS

- Upcoming** 233<sup>rd</sup> AAS Meeting, Seattle, WA, Jan 10th 10 AM, Abstract ID 401.01,  
*‘Calibration of full-disk HeI 10830 Å filtergrams of the Chromospheric Telescope’*
- Oct 2018** Texas Astronomy Undergraduate Research Symposium, UT Austin,  
*‘Delayed Stellar Mass Assembly in the Dwarf Galaxy KDG 215’*
- Oct 2018** [Gulf Coast Undergraduate Research Symposium](#), Rice University, Houston,  
*‘Delayed Stellar Mass Assembly in the Dwarf Galaxy KDG 215’*
- Jul 2018** DAAD RISE Meeting, Heidelberg, Germany,  
*‘Stargazing at Noon: Observations of Solar Filaments’*
- Jan 2018** 231<sup>st</sup> AAS Meeting, Washington DC
- Mar 2017** Undergraduate Research Forum, UT Austin,  
*‘Observing Eclipsing Binaries’*

#### TEACHING EXPERIENCE

Responsible for lab supervision and safety, facilitating group projects and weekly discussion sessions in:

##### [University of Texas at Austin](#)

UGS 303: Originality in Arts and Sciences	Fall 2016, 2017
M 427J: Differential Equations with Linear Algebra Honors	Spring 2015

#### SERVICE & OUTREACH

- Secretary, Astronomy Students Association, UT Austin, TX Aug 2017 - May 2018
  - Coordinate outreach events at UT and star parties off-campus
  - Invite astronomy faculty members to give research talks