

**RESEARCH INTERESTS**

My research aims to better understand the relationship between star formation on parsec scales (star clusters and star-forming regions) and the evolution of galaxies in the local Universe. I have found and characterized relationships between host galaxies and both star clusters and star-forming regions. In addition, I am building a large sample of star-forming galaxies from the largest area ( $\sim 3\pi$ ) emission-line galaxy survey called the Census of the Local Universe (CLU) to better understand star formation on global galaxy scales. These new galaxies will help to increase the efficiency of searches looking for the electromagnetic counterparts to gravitational wave events.

**EDUCATION**

**Ph.D. in Astrophysics/Physics**, U OF WYOMING August, 2015  
**B.S. in Astrophysics**, U OF MINNESOTA May 2008  
**B.S. in Physics**, U OF MINNESOTA May 2008  
**B.S. in Chemistry**, U OF MINNESOTA August 2004

**RESEARCH****CALTECH**Staff Scientist

Nov 2018 – Present

- NASA/IPAC Extragalactic Database (NED)
- NED-GWF service
- Literature and large survey ingestion into NED

Postdoctoral Scholar

Sept 2015 – Oct 2018

- Lead of the Census of the local Universe (CLU) H $\alpha$  galaxy survey covering  $3\pi$  of the sky
- Used CLU to help search for EM counterparts to aLIGO triggers
- Lead of star clusters in LEGUS dwarf galaxies

**UNIVERSITY OF WYOMING**Graduate Student

Sept 2009 – Aug 2015

- Advisor: Daniel Dale
- Identify star-forming regions in 258 LVL galaxies
- Discovered a relationship between the distributions of star-forming regions and galaxy environment
- Completed optical photometry for LVL
- Measured dust and physical properties of LVL galaxies
- Star cluster identification in LEGUS dwarf galaxies
- Expanded undergraduate thesis project to star clusters in all ANGST dwarf galaxies

Academic Professional Research Scientist

July 2008 – Aug 2009

- All data reduction for the 5 year H $\alpha$  galaxy survey (WYSH)
- Observations of H $\alpha$  and optical imaging for WYSH (8 nights a month for 1.5 years)

**MCDONALD OBSERVATORY**

Summer 2007

REU Summer Intern

- Derived  $\alpha$ -abundances of the Leo II dwarf galaxy

**UNIVERSITY OF MINNESOTA**

Sept 2006 – June 2008

Undergraduate Researcher

- Identify and derive properties of star clusters in one ANGST galaxy

**AWARDS/FUNDING**

**NASA-HST** “Dwarfs and Giants: Massive Stars in Little Dwarf Galaxies” as Co-PI: \$1,000 (2017-2019)  
**NASA-HST AR-14285** “The Young Star Groups in Dwarf Galaxies” as Co-PI: \$10,000 (2016-2018)  
**NASA-AURA** “LEGUS: Legacy ExtraGalactic UV Survey” as Co-PI: \$36,749 (2014-2015)  
**NASA-WY Space Grant**, Graduate Fellowship - \$26,000 (2010-2011)  
**NASA-AURA** “ANGST: ACS Nearby Galaxy Treasury Survey” as Co-PI: \$23,000 (2009 – 2010)

**PROFESSIONAL  
COLLABORATIONS**

**ZTF** – Host galaxy science for transient discoveries (2017-Present)  
**PTF/iPTF** – Lead of CLU, H $\alpha$  galaxy survey covering  $3\pi$  of the sky (2016 – Present)  
**LEGUS** – Lead of star clusters in LEGUS dwarf galaxies (2015 – Present)  
**LVL** – Responsible for star-forming regions in all LVL galaxies (2012 – 2016)  
**ANGST** – Responsible for star clusters in ANGST dwarf galaxies (2008 – 2012)

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**SELECTED PUBLICATIONS**

- **Cook+2019**, ApJ, “Census of the Local Universe (CLU) I: Characterization of Galaxy Catalogs from Preliminary Fields”
- **Cook+2019**, MNRAS, “Star Clusters Catalogs in the LEGUS Dwarf Galaxies”
- Hunter+2018, Gallardo, Zhang, Adamo, **Cook**, +21 authors, ApJ, “A Study of Two Dwarf Irregular Galaxies with Asymmetrical Star Formation Distributions”
- Abbott+2017, ApJL, “Multi-messenger Observations of a Binary Neutron Star Merger”
- Kasliwal+2017, Nakar, Singer, Kaplan, **Cook**, +73 authors, *Science*, “Illuminating gravitational waves: A concordant picture of photons from a neutron star merger”
- Adamo+2017, Ryon, Messa, Kim, Grasha, **Cook**, +51 authors, ApJ, “Legacy ExtraGalactic UV Survey with The Hubble Space Telescope: Stellar Cluster Catalogs and First Insights Into Cluster Formation and Evolution in NGC 628”
- Dale+2016, **Cook**, +23 authors, ApJ, 837, 1, “Updated 34-band Photometry for the Sings/KINGFISH Samples of Nearby Galaxies”
- Kasliwal+2016, *ApJL*, 824, 2, “iPTF Search for an Optical Counterpart to Gravitational-wave Transient GW150914”
- **Cook+2016**, MNRAS, 462, 4, “The Connection Between Galaxy Environment and the Luminosity Function Slopes of Star-Forming Regions”
- **Cook+2014**, MNRAS, 245, 1, “Spitzer Local Volume Legacy (LVL) SEDs and Physical Properties”
- **Cook +2014**, MNRAS, 245, 1, “The Spitzer Local Volume Legacy (LVL) Global Optical Photometry”
- **Cook+2014**, MNRAS, 245, 1, “Empirical ugr<sub>i</sub>-UBVR<sub>c</sub> Transformations for Galaxies”
- **Cook+2012**, *ApJ*, 751, 100, “The ACS Nearby Galaxy Survey Treasury. X. Quantifying the Star Cluster Formation Efficiency of Nearby Dwarf Galaxies”
- Cannon+2011, *ApJ*, 735, 1, “The M81 Group Dwarf Irregular Galaxy DDO165.II. Connecting Recent Star Formation with ISM Structures and Kinematics”
- Dale+2010, *ApJ*, 712, 189, “The Wyoming Survey for H $\alpha$ . II. H $\alpha$  Luminosity functions at  $z \sim 0.16$ , 0.24, 0.32, and 0.40”
- Shetrone+2008, *AJ*, 137, 62, “Chemical Abundances of the Leo II Dwarf Galaxy”

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**OBSERVING****Total Observing: 400+ nights****Cerro Tololo Inter-American Observatory (CTIO), La Serena, Chile**

- Blanco 4m Telescope -5 nights, NEWFIRM near-infrared imager

**W. M. Keck Observatory, Kamuela, HI**

- Keck-I 10m Telescope -3 nights, Multi-Object Spectrograph for Infrared Exploration (MOSFIRE)

**McDonald Observatory, U of Texas at Austin**

- HET 11m Telescope -1 night, Low Resolution Spectrograph (LRS)
- Smith 2.7m Telescope -2 nights, Large Cass Spectrometer (LCS)
- Struve 2.1m Telescope -12 nights, Cass Echelle (CE) spectrograph
- 0.8m Telescope -6 nights, Prime Focus Corrector (PFC) imager

**Palomar Observatory, Caltech**

- Hale 5.1m Telescope – 5 nights, Wide-field Infrared Camera (WIRC)
- Hale 5.1m Telescope – 21 nights, Double Spectrograph (DBSP)

**Steward Observatory, U of Arizona**

- BOK 2.3m Telescope – 15 nights, 90 prime imager

**Wyoming InfraRed Observatory (WIRO), U of Wyoming**

- 2.3m Telescope – 300+ nights, Prime Focus Camera (PFC) imager
- 2.3m Telescope – 4 nights, Longslit Spectrograph

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**COMPUTER AND PROGRAMMING SKILLS****Advanced**

- IDL
- IRAF
- LaTeX
- Python

**Intermediate**

- HTML
- psq/sql
- cgi
- Shell scripting

**Basic**

- C/C++

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**PROFESSIONAL SERVICES**

**ZTF summer school** – Co-Organized, Summer 2017

**Caltech Tea Talks** – Co-Organizer, 2016-2017

**JWST Nearby Galaxies Workshop** – member of Local Organizing Committee, Jan 2017

**PTF summer school** – assisted with python workshop, Summer 2016

**Member** – Internal Caltech TAC (Palomar and Keck), 2016

**Referee** – Monthly Notices of the Royal Astronomical Society (MNRAS), 2013 – Present

**NSF Panelist** – Astronomy and Astrophysics Research Grants (AAG)

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**ORAL PRESENTATIONS**

- “The Role of NED in Identifying EM Counterparts to GW events”
  - **StSci (2019) EMMA conference**
- “Census of the local Universe (CLU): Preliminary Fields”
  - **Caltech (2017), U of Wisconsin – Milwaukee (2016, 2017), AAS Meeting #231 (2018)**
- “Star Clusters in LEGUS Dwarf Galaxies”
  - **Sexten, Italy (2017), AAS Meeting #229 (2017)**
- “Spitzer Local Volume Legacy (LVL) Star-Forming Regions: Luminosity Functions”
  - **U of Wisconsin – Milwaukee (2016), Caltech/IPAC (2016), StSci (2016)**
- “Spitzer Local Volume Legacy (LVL) Dust Properties in Low-Mass Galaxies”
  - **Caltech/IPAC (2015), StSci (2014), U of Arizona (2014)**
- “Clustered Star Formation in Nearby Dwarf Galaxies”
  - **Denver University (2013), U of Minnesota (2013), Macalester College (2013)**

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**TEACHING**

- CALTECH**
- Co-Coordinator, ZTF Undergraduate Research Summer School** June 2017
- Organized Observatory tours and hands-on python tutorials
- UNIVERSITY OF WYOMING**
- Instructor, Survey of Astronomy (ASTRO 1050)** Summer 2013
- Developed studio-style class; combined lecture and lab format
  - Received the highest evaluation in all teaching related categories
- Substitute instructor, graduate level interstellar medium (ISM) course** 1 wk, Fall 2012
- Presented lectures on graduate level course material
  - Instructed class in short journal article presentations.
- Substitute instructor, graduate level cosmology course** 1 wk, Fall 2013
- Presented lectures on graduate level course material
- Graduate Teaching Assistant, Survey of Astronomy** 2009-2010
- Led laboratories utilizing inquiry-based strategies
- Physics at Night Tutor** 2009 - 2012
- Assisted students with homework problems in all levels of physics
- UNIVERSITY OF MINNESOTA**
- Undergraduate Teaching Assistant, Introduction to Astronomy** 2007-2008
- Led weekly laboratories for introductory astronomy class.

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**MENTORING**

- Bethany Sutter (Caltech Undergraduate Student) Summer, 2017
- Improved color-color selection cuts for extreme galaxies found in CLU
  - Poster presentation at SURF symposium, Caltech
- Jessica Sutter (U of Wyoming Graduate Student) Summer, 2016
- Automated Determination of CLU Galaxy Properties from Spectroscopic Observations
  - Poster presentation at AAS Meeting #229, 428.05
- Enia XH (Lafayette College Undergraduate Student) Summer, 2016
- Finding Nova Shells Around Cataclysmic Variable Stars in PTF Data
  - Xhakaj et al. (2017; submitted)

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**PUBLIC OUTREACH**

- CALTECH**
- Presentation on finding the EM counterpart to GW170817, Nov 2017
  - Panelist for AAS press event at Palomar Observatory, January 2016
  - Conducted public and private tours of Hale telescope at Palomar Observatory, 2015-Present
- U OF WYOMING**
- AAS Chambliss judge, Seattle, WA, January 2015
  - Astronomy career presentation, 1<sup>st</sup> graders, Summer 2013
  - Judge at Junior Science and Humanities Symposium, March 2012, 2013, 2014, 2015
  - Judge for Wyoming State Science Fair, March 2011, 2013, 2014
  - Wyoming Astro-Camp supernovae presentation and demonstration (Summer 2010, 2011)
  - Conducted star parties and physics demonstrations at the Wyoming State Science Fair (2010-2015)
  - Conducted private & public tours of the Wyoming InfraRed Observatory (WIRO) (2008-2015)
- MCDONALD OBSERVATORY**
- Assisted with star parties including a constellation tour (Summer 2007)