

KELLY A. DOUGLASS, PHD  
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## EDUCATION

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**Ph.D., Physics — Drexel University** July 2017  
Thesis: Observational evidence of the large-scale environmental influence on dwarf galaxy evolution  
Advisor: Dr. Michael Vogeley  
**M.S., Physics — Drexel University** June 2013  
Cumulative GPA: 3.84/4.0  
**B.A., Physics — Cornell University** May 2011  
Minor: Astronomy

## PUBLICATIONS

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**Douglass, K.A.**, Vogeley, M.S. and Cen, R. (2017). Large-scale environmental dependence of chemical abundances in dwarf galaxies and implications for connecting star formation and halo mass. *Submitted to ApJ*. (arXiv: 1706.07099)  
**Douglass, K.A.** and Vogeley, M.S. (2017b). Large-scale environmental dependence of the abundance ratio of nitrogen to oxygen in blue, star-forming galaxies fainter than  $L_*$ . *ApJ*, 837 (1): 42–55. (arXiv: 1612.04908)  
**Douglass, K.A.** and Vogeley, M.S. (2017a). Determining the large-scale environmental dependence of gas-phase metallicity in dwarf galaxies. *ApJ*, 834 (2): 186–198. (arXiv: 1604.08599)

## EXPERIENCE

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**Visiting Assistant Professor** 2017–present  
*Department of Physics & Astronomy at the University of Rochester*

- Taught two astronomy courses each semester for two years
- Coordinated graduate student teaching assistants and undergraduate teaching instructors for multiple classes
- Conducted research with the DESI collaboration
- Conducted research with the IR instrumentation lab
- Advised undergraduate students in research

**Research Fellow** 2012–2017  
*Astrophysics Group at Drexel University*

- Calculated oxygen, nitrogen gas-phase chemical abundances of dwarf galaxies using SDSS DR7 and SHELS spectroscopic data using the Direct  $T_e$  method
- Developed approximation for singly-ionized oxygen abundance in the Direct  $T_e$  method
- Performed statistical analysis (KS test) to determine influence of large-scale environment on chemical abundances of dwarf galaxies
- Assisted in advising freshmen physics majors in their summer STAR research projects
  - Brean Prefontaine (Summer 2014) — “Classifying dwarf galaxies as satellites”
  - Salvatore Zerbo (Summer 2015) — “Visualizing cosmic voids and galaxies”

- Assisted in advising senior physics majors in their senior research projects
  - Jinfu Dai (2015–16) — “Green valley galaxies in voids”
  - Daniele Schneider (2016–17) — “The effects of small-scale environment on dwarf galaxies”
- NSF supported researcher

**Teaching Assistant** 2011–2015  
*Drexel University Department of Physics*

- Taught recitations and labs for numerous courses
- Graded assignments, held office hours, and hosted study sessions
- Produced detailed solutions to homework assignments and exams
- Maintained class websites

**Undergraduate Research Assistant** 2010–2011  
*Submillimeter Astrophysics Group at Cornell University — P.I.: Prof. Gordon Stacey*

- Redesigned and rebuilt cycle box for ZEUS-2 (High-Redshift (Z) and Early Universe Spectrometer – 2), to operate under modified housekeeping conditions
- Developed software interface for communication with superconducting magnet controller and cycle box of ZEUS-2
- Designed and soldered first two cold stage housekeeping PC Boards and related connectors, cables for ZEUS-2
- Prepared parts for and helped in assembly of ZEUS-2

**Consultant & Teaching Assistant** 2009–2011  
*Cornell University Department of Computer Science*

- Taught basic programming skills and helped students work through examples during recitations
- Graded programming assignments and exams

## PRESENTATIONS

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### COLLOQUIA

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|---|------------------------------------|
| <b>Chemical abundances, dark matter, and the cosmos</b><br><i>University of Pittsburgh</i>        | 8 September 2017<br>Pittsburgh, PA |
| <b>Chemical abundances, dark matter, and the cosmos</b><br><i>University of Rochester</i>         | 16 May 2017<br>Rochester, NY       |
| <b>Chemical abundances, dark matter, and the cosmos</b><br><i>Franklin &amp; Marshall College</i> | 4 May 2017<br>Lancaster, PA        |

### CONFERENCES

- Large-scale environmental dependence of chemical abundances in dwarf galaxies and implications for connecting star formation history and halo mass**
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| 229 <sup>th</sup> Annual Meeting of the American Astronomical Society<br><i>Gaylord Texan Resort &amp; Convention Center</i> | January 2017<br>Grapevine, TX |
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- Large-scale environmental dependence of gas-phase metallicity in dwarf galaxies**
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| 227 <sup>th</sup> Annual Meeting of the American Astronomical Society (poster)<br><i>Gaylord Palms Resort &amp; Convention Center</i> | January 2016<br>Kissimmee, FL |
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## Large-scale environmental dependence of gas-phase metallicity in dwarf galaxies

Astrophilly 2015  
The Franklin Institute

August 2015  
Philadelphia, PA

## Gas-phase metallicity of void dwarf galaxies

224<sup>th</sup> Annual Meeting of the American Astronomical Society (poster)  
Westin Copley Place

June 2014  
Boston, MA

## TEACHING

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### PROFESSOR

- Astronomy 106: The Cosmic Origins of Life** Fall 2017  
*(University of Rochester)*
- Astronomy 111: The Origin of the Solar System** Fall 2017  
*(University of Rochester)*

### TEACHING ASSISTANT

- Physics 135: How Things Work** Summer 2015  
*Professor: Paul Kaczmarczik (Drexel University Department of Physics)*
- Physics 201: Fundamentals of Physics III** Summer 2014  
*Professor: Eric Scheidly (Drexel University Department of Physics)*
- Physics 115: Contemporary Physics III** Spring 2013–2015  
*Professor: Dr. Michael Vogeley (2014,2015), Dr. Stephen McMillan (2013) (Drexel University Department of Physics)*
- Physics 114: Contemporary Physics II** Winter 2013–2014  
*Professor: Dr. Gordon Richards (2014), Dr. Luis Cruz Cruz (2013) (Drexel University Department of Physics)*
- Physics 113: Contemporary Physics I** Fall 2012–2013  
*Professor: Dr. David Goldberg (Drexel University Department of Physics)*
- Education T580: TA Orientation and Preparation** Fall 2012–2015  
*Professor: Dr. Alexis Finger (Drexel University Department of English & Philosophy)*
- Physics 102: Fundamentals of Physics II** Fall 2011 – Spring 2012, Summer 2013  
*Professor: Dr. Somdev Tyagi (Summer 2013), Dr. Alexey Aprelev (Spring 2012), Jerry Steinberg (Winter 2012), Dr. Luis Cruz Cruz (Fall 2011) (Drexel University Department of Physics)*
- CS 1112: Introduction to MATLAB** Spring 2011  
*Professor: Dr. K.-Y. Daisy Fan (Cornell University Department of Computer Science)*

### GRADER

- Honors 301: Special Theory of Relativity** Winter 2015  
*Professor: Dr. Michael Vogeley (Drexel University Department of Physics)*
- Physics 428: Quantum Mechanics III** Fall 2014  
*Professor: Dr. Michael Vogeley (Drexel University Department of Physics)*

### CONSULTANT

- CS 1112: Introduction to MATLAB** Spring 2009 – Fall 2010  
*Professor: Dr. K.-Y. Daisy Fan (Cornell University Department of Computer Science)*

## HONORS AND AWARDS

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- Outstanding Dissertation Award, Drexel University College of Arts and Sciences, 2017
- Chambliss Astronomy Achievement Student Award, American Astronomical Society, 2014
- Continuing Teaching Excellence Award, Drexel University Office of Graduate Studies, 2014
- Teaching Excellence Award, Drexel University Office of Graduate Studies, 2013
- Teaching Excellence Award — Highly Commended, Drexel University Office of Graduate Studies, 2012
- First Year Graduate Student Award, Drexel University Department of Physics, 2012
- Drexel College of Arts and Sciences Dean's Scholarship, Drexel University College of Arts and Sciences, 2011–2013

## OUTREACH

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### **Volunteer**

2011–2017

*Drexel University Lynch Observatory*

- Monthly telescope open house for general public
- Set up, operate, and store three telescopes, including a 16-inch Meade LX200GPS telescope

### **Instructor**

2015–2016

*Professor Bob's Hands-On Science*

- Taught general science concepts to children ages 4–12 at various summer camps in King of Prussia, PA
- Responsibilities included developing 40-minute lesson plans that consist of explaining various science concepts (electricity, acids & bases, light, etc.) through hands-on activities and experiments

## REFERENCES

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- **Dr. Michael Vogeley**  
Associate Head for Graduate Studies & Professor of Physics  
Department of Physics  
Drexel University  
811 Disque Hall, Philadelphia, PA 19104  
Telephone: 215-895-2710  
Email: vogeley@drexel.edu
- **Dr. Gordon Richards**  
Professor of Physics  
Department of Physics  
Drexel University  
812 Disque Hall, Philadelphia, PA 19104  
Telephone: 215-895-2713  
Email: gtr@physics.drexel.edu
- **Dr. Steve McMillan**  
Department Head & Professor of Physics  
Department of Physics  
Drexel University  
816 Disque Hall, Philadelphia, PA 19104  
Telephone: 215-895-2709  
Email: steve@physics.drexel.edu
- **Dr. Dave Goldberg**  
Associate Dean for Research and Graduate Education,  
Associate Head for Undergraduate Studies, Professor of Physics  
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