

# Catherine Elena Fielder



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## EDUCATION

### 2014 – PRESENT **Doctor of Philosophy in Physics – Expected July 2022**

Department of Physics and Astronomy  
*University of Pittsburgh*

### 2014 – 2016 **Master of Science in Physics**

Department of Physics and Astronomy  
*University of Pittsburgh*

### 2010 – 2014 **Bachelor of Science in Physics**

MAGNA CUM LAUDE, PHI BETA KAPPA, SIGMA PI SIGMA, DEANS LIST  
Department of Physics  
*Texas Tech University*

## RESEARCH EXPERIENCE

### Graduate Research Assistant; Adviser: Dr. Jeff Newman, Co-Adviser: Dr. Andrew Zentner

*University of Pittsburgh, Dept. of Physics and Astronomy*  
Constructing and analyzing the first long-baseline SED of the Milky Way  
Multi-wavelength Milky Way Analogues  
Empirically driven  $K$ -correction techniques  
Analyses of Dark Matter halo property correlations and halo density profiles

2015-present  
*Pittsburgh, PA*

### Post Baccalaureate Researcher; Adviser: Dr. Wesley Even

*Los Alamos National Laboratory*  
Modeling of unusual Type Ib and Ic Supernovae

Summer 2014  
*Los Alamos, NM*

### Undergraduate Researcher; Adviser: Dr. Tom Maccarone

*Texas Tech University*  
Searching for Low Mass X-ray binaries near the center of the Milky Way

2012-2014  
*Lubbock, TX*

## SKILLS

CODING LANGUAGES Python, IDL, L<sup>A</sup>T<sub>E</sub>X, Mathematica

MACHINE LEARNING PACKAGES scikit-learn, GPyTorch, PyTorch

SPOKEN LANGUAGES English, Japanese (competent)

OBSERVING WIYN 3.5m telescope, Kitt Peak National Observatory, 1 week observing for Sweet Spot Survey  
Green Bank Telescope Observer Training Workshop, 1 week, Fall 2017  
Observational Techniques course at TTU with 12" and 20" telescopes at the Preston Gott Observatory,  
Fall 2013

## AWARDS

### 2014 **Outstanding Research Talk**

*Los Alamos National Lab*

### 2014 **Mary E. Warga Predoctoral Fellowship**

*University of Pittsburgh*

## TEACHING AND MENTORING EXPERIENCE

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PROJECT MENTOR, PHD STUDENT	Lorena Mezini, Exploring subhalo effects on host halo properties
TEACHING ASSISTANT	Astro o87: Basics of Space Flight (University of Pittsburgh, fall 2014, spring 2015) Astro o88: Stonehenge to Hubble (University of Pittsburgh, spring 2018) Phys oiii: Introduction to Physics 2 (University of Pittsburgh, spring 2015)
TEACHING FELLOW	Astro o87 and Astro o88 (University of Pittsburgh, fall 2018)
GUEST LECTURE	AstroPGH Research Seminar “A Beginner’s Guide to $\text{\LaTeX}$ ” (University of Pittsburgh, July 1, 2020)

## OUTREACH

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### Speaker for Astronomy on Tap (Fall 2018)

National project for bringing astronomy to the general public.

### High School Class Lecture (March 2020)

Guest lecture on dark matter at Shadyside Academy.

### High School Visit Lecture (Oct. 2019)

Guest lecture on astrophysics research for the Avonworth High School visit to the Pitt Physics and Astronomy department.

### Society of Physics Students Research Lecture (Sept. 2020)

Guest lecture on astrophysics research for the Pitt Society of Physics students.

### Society of Physics Students Student Mentor (Fall 2020)

Through the Women and Minorities in Physics group I mentor undergraduate students with a research interest in astronomy.

## PRESENTATIONS

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INVITED TALKS	Galaxies/ISM Group Talk, The Ohio State University - Oct. 6, 2020
CONTRIBUTED TALKS	SDSS-IV Collaboration Meeting – August 2021 Linking the Galactic and Extragalactic, digital at the University of Sydney – Dec. 2020 Lunch Talk Series, National Radio Astronomy Observatory/University of Virginia - Oct. 27, 2020 Morning Astro Tea, Sydney Institute for Astronomy/The University of Sydney - Oct. 26, 2020 Talk Series, International Centre for Radio Astronomy Research, Australia - Oct. 22, 2020 Galaxy Lunch, Yale University - Oct. 21, 2020 Astronomy Seminar, Vanderbilt University - Oct. 16, 2020 Astronomy Seminar, New Mexico State University - Oct. 5, 2020 SDSS-IV Collaboration Meeting – June 2020 Great Lakes Cosmology Workshop 12, Rochester Institute of Technology, Rochester USA – Aug. 2019 Great Lakes Cosmology Workshop 11, Mc Master University, Hamilton, Ontario Canada – 2016
POSTER PRESENTATIONS	Small Galaxies Cosmic Questions, Durham, United Kingdom – July 2019 Dark Matter 2018, Kingston, Ontario Canada – 2018
DEPARTMENTAL TALKS	Astro Student Seminar – March 2021, Sept. 2020, Dec. 2019, May 2019, Dec. 2018, Dec. 2017

## COLLABORATIONS

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SDSS-IV Milky Way as a Galaxy and Milky Way Analogs Working Groups

SDSS-IV MaNGA H $\alpha$  Follow-up Team

## PUBLICATIONS (3 FIRST AUTHOR, 4 CONTRIBUTING AUTHOR)

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LEAD AUTHOR	1. <b>Fielder, C. E.</b> ; Newman, J. A.; Andrews, B. H.; et al., 2021. <i>Monthly Notices of the Royal Astronomical Society</i> Accepted, arXiv:astro-ph/2106.14900 Constraining the Milky Way’s Ultraviolet to Infrared SED with Gaussian Process Regression.
	2. <b>Fielder, C. E.</b> ; Mao, Y.; Zentner, A. R.; Newman, J. A.; et al., 2020. <i>Monthly Notices of the Royal Astronomical Society</i> , 499(2), 2426–2444. Illuminating dark matter halo density profiles without subhaloes.
	3. <b>Fielder, C. E.</b> ; Mao, Y.; Newman, J. A.; Zentner, A. R.; et al., 2019. <i>Monthly Notices of the Royal Astronomical Society</i> , 486(4), 4545–4568.

Predictably missing satellites: subhalo abundances in Milky Way-like haloes.

- CONTRIBUTING AUTHOR 1. Stark, D. V.; et al., 2021. *Monthly Notices of the Royal Astronomical Society*, 503(1), 1345-1366.  
H I-MaNGA: tracing the physics of the neutral and ionized ISM with the second data release.
2. Boardman, N. F.; et al., 2020. *Monthly Notices of the Royal Astronomical Society*, 498(4), 4943-4954  
Are the Milky Way and Andromeda unusual? A comparison with Milky Way and Andromeda  
Analogues.
3. Boardman, N. F.; et al., 2020. *Monthly Notices of the Royal Astronomical Society*, 494(3), 3672-3701.  
Milky Way analogues in MaNGA: multiparameter homogeneity and comparison to the Milky Way.
4. Masters, K. L.; et al. 2019. *Monthly Notices of the Royal Astronomical Society*, 488(3), 3396-3405.  
H I-MaNGA: H I follow-up for the MaNGA survey.

## REFERENCES

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### Dr. Jeffrey Newman

POSITION Professor  
EMPLOYER Department of Physics and Astronomy  
*University of Pittsburgh*  
EMAIL janewman@pitt.edu

### Dr. Brett Andrews

POSITION Research Assistant Professor  
EMPLOYER Department of Physics and Astronomy  
*University of Pittsburgh*  
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### Dr. Gail Zasowski

POSITION Assistant Professor  
EMPLOYER Department of Physics and Astronomy  
*University of Utah*  
EMAIL gail.zasowski@gmail.com

### Dr. Yao-Yuan Mao

POSITION Post Doctoral Researcher, Einstein Fellow  
EMPLOYER Department of Physics and Astronomy  
*Rutgers University*  
EMAIL yymao.astro@gmail.com

### Dr. Andrew Zentner

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EMPLOYER Department of Physics and Astronomy  
*University of Pittsburgh*  
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