

# Catherine Elena Fielder



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## POSITIONS

AUG. 2022 – PRESENT **Postdoctoral Research Associate, Steward Observatory**  
University of Arizona, Tucson, AZ, USA

## EDUCATION

2014 – 2022 **Doctor of Philosophy in Physics**  
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** 2015-2022  
*University of Pittsburgh, Dept. of Physics and Astronomy* *Pittsburgh, PA*  
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

**Post Baccalaureate Researcher; Adviser: Dr. Wesley Even** Summer 2014  
*Los Alamos National Laboratory* *Los Alamos, NM*  
Modeling of unusual Type Ib and Ic Supernovae

**Undergraduate Researcher; Adviser: Dr. Tom Maccarone** 2012-2014  
*Texas Tech University* *Lubbock, TX*  
Searching for Low Mass X-ray binaries near the center of the Milky Way

## SKILLS

CODING LANGUAGES	Python, IDL, L <sup>A</sup> T <sub>E</sub> X, Mathematica
MACHINE LEARNING PACKAGES	scikit-learn, GPyTorch, PyTorch, GPflow, TensorFlow
SPOKEN LANGUAGES	English, Japanese (competent)
OBSERVING	Magellan Clay MegaCam, Las Campanas Observatory, 2 nights, Fall 2022 Green Bank Telescope Observer Training Workshop, 1 week, Fall 2017 WIYN 3.5m telescope, Kitt Peak National Observatory, 1 week, Spring 2015 Observational Techniques course at TTU with 12" and 20" telescopes at the Preston Gott Observatory, Fall semester 2013

## AWARDS

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- 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 087: Basics of Space Flight (University of Pittsburgh, fall 2014, spring 2015) Astro 088: Stonehenge to Hubble (University of Pittsburgh, spring 2018) Phys 0111: Introduction to Physics 2 (University of Pittsburgh, spring 2015)
TEACHING FELLOW	Astro 087 and Astro 088 (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 Visit Lecture** (Oct. 2019)  
Guest lecture on astrophysics research for the Avonworth High School visit to the Pitt Physics and Astronomy department.
- High School Class Lecture** (March 2020)  
Guest lecture on dark matter at Shadyside Academy.
- 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.
- ACCElerate Festival** (April 8-10 2022)  
At this outreach festival at the Smithsonian we presented a booth on making the largest map of the Universe with DESI.

## PRESENTATIONS

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INVITED TALKS	Astronomy Seminar, The University of Surrey - Oct. 27, 2022 Hot Topics Seminar, The University of Toledo - Feb. 11, 2022 Physics and Astronomy Colloquium, The University of Utah - Jan. 20, 2022 Galaxies/ISM Group Talk, The Ohio State University - Oct. 6, 2020
CONTRIBUTED TALKS	MWAG X MaNGA SciCon 1 – November 29, 2021 SDSS-IV Collaboration Meeting – August 2021 Linking the Galactic and Extragalactic, 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, McMaster 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	Steward Journal Club – Sept. 2022 Pitt 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 I Follow-up Team  
DESI - Outreach Committee

## 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> 508(3), 4459-4483.<br>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.<br>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.<br>Predictably missing satellites: subhalo abundances in Milky Way-like haloes.    |
| CONTRIBUTING AUTHOR | 1. Stark, D. V.; et al., 2021. <i>Monthly Notices of the Royal Astronomical Society</i> , 503(1), 1345-1366.<br>H I-MaNGA: tracing the physics of the neutral and ionized ISM with the second data release.                                       |
|                     | 2. Boardman, N. F.; et al., 2020. <i>Monthly Notices of the Royal Astronomical Society</i> , 498(4), 4943-4954<br>Are the Milky Way and Andromeda unusual? A comparison with Milky Way and Andromeda Analogs.                                     |
|                     | 3. Boardman, N. F.; et al., 2020. <i>Monthly Notices of the Royal Astronomical Society</i> , 494(3), 3672-3701.<br>Milky Way analogues in MaNGA: multiparameter homogeneity and comparison to the Milky Way.                                      |
|                     | 4. Masters, K. L.; et al. 2019. <i>Monthly Notices of the Royal Astronomical Society</i> , 488(3), 3396-3405.<br>H I-MaNGA: H I follow-up for the MaNGA survey.   |

## REFERENCES

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<b>Dr. David Sand</b>		<b>Dr. Gail Zasowski</b>	
POSITION	Associate Professor	POSITION	Assistant Professor
EMPLOYER	Department of Astronomy and Steward Observatory <i>University of Arizona</i>	EMPLOYER	Department of Physics and Astronomy <i>University of Utah</i>
EMAIL	dsand@arizona.edu	EMAIL	gail.zasowski@gmail.com
<b>Dr. Jeffrey Newman</b>		<b>Dr. Yao-Yuan Mao</b>	
POSITION	Professor	POSITION	Assistant Professor
EMPLOYER	Department of Physics and Astronomy <i>University of Pittsburgh</i>	EMPLOYER	Department of Physics and Astronomy <i>University of Utah</i>
EMAIL	janewman@pitt.edu	EMAIL	yymao.astro@gmail.com
<b>Dr. Brett Andrews</b>		<b>Dr. Andrew Zentner</b>	
POSITION	Research Assistant Professor	POSITION	Professor
EMPLOYER	Department of Physics and Astronomy <i>University of Pittsburgh</i>	EMPLOYER	Department of Physics and Astronomy <i>University of Pittsburgh</i>
EMAIL	andrewsb@pitt.edu	EMAIL	zentner@pitt.edu