CATHERINE FIELDER

Pittsburgh, PA
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EDUCATION

University of Pittsburgh, Pittsburgh, PA *expected summer 2021*
Ph.D. Physics & Astronomy

University of Pittsburgh, Pittsburgh, PA *2016*
M.S. Physics & Astronomy

Texas Tech University, Lubbock, TX *2014*
B.S. Physics & Astronomy, Magna Cum Laude

TECHNICAL & PROFESSIONAL SKILLS

Languages and Tools:	Python (primary) including Pandas and scikit-learn, IDL, Mathematica, version control (git), operating systems (Linux, OS X), LaTeX
Techniques:	linear/robust regressions, Gaussian process regression, nearest neighbors, binary trees
Communication skills:	6 years of teaching, 3 years of managing an organization, publishing peer reviewed articles, and crafting research presentations for technical and non-technical audiences

EXPERIENCE

Graduate Research Assistant *2014-present*
University of Pittsburgh, Pittsburgh, PA

- Principal developer for a Python software package: cfielder/Milky-Way-Analogs, developed efficient and updated algorithms for selecting and analyzing Milky Way analog galaxies.
- Manipulated numerous sets of simulation data on determining dark matter halo property correlations with rank correlation measures and built a Poisson maximum likelihood model with robust regression techniques to determine additional properties.
- Worked with large scale data doing analysis on clustered hardware to construct mass distributions from particles, performed least squares fitting to numerous analytic prescriptions, and assessed fit quality with statistical measures to determine halo mass distributions.
- Performed large statistical analyses of galaxies similar to our own Milky Way across multiple data sets to infer the Milky Way's brightness at many wavelengths and constrain its formation history.
- Published original research in top international peer-reviewed journals, and presented results at international conferences.
- Developed curriculum, taught in support roles for a large variety of undergraduate physics and astronomy courses.

Post Baccalaureate Researcher *2014*
Los Alamos National Labs, Los Alamos, NM

- Core developer for a Python software package on analyzing opacities in supernova ejecta.
- Used data analysis techniques and tools to study and visualize low-luminosity supernovae and made templates to be included in the supernova database.
- Award: Outstanding Talk at the Summer 2014 Research forum.

Undergraduate Research Assistant *2012-2014*
Texas Tech University, Lubbock, TX

- Utilized data mining techniques and data frame analysis in order to study pre-existing data bases on binary stars in order to look for unique objects in the Milky Way.

Society of Physics Students President *2012-2014*
Texas Tech University, Lubbock, TX

– Planned annual departmental banquet and various outreach and social events such as observatory star parties, physics demonstrations, science fair judging, and science trips.

PUBLICATIONS

Refereed: 3 first author, 4 co-author. Presentations: 11 Oral, 2 Poster.