

EDUCATION

Purdue University West Lafayette, Indiana
PhD in Physics May 2013

Luther College Decorah, Iowa
Bachelor of Arts in Physics and Math (summa cum laude) May 2006

EMPLOYMENT

Northwestern University, Center for Interdisciplinary Exploration and Research in Astrophysics Evanston, Illinois
Director of Operations, CIERA September 2017 – current
Research Assistant Professor February 2018 – current

Pennsylvania State University, Department of Astronomy and Astrophysics State College, Pennsylvania
Research Associate July 2015 – August 2017
Postdoctoral Scholar June 2013 – June 2015

Purdue University, Department of Physics West Lafayette, Indiana
Graduate Research Assistant January 2008 – May 2013
Graduate Teaching Assistant August 2006 – December 2007

RESEARCH INTERESTS

X-ray astronomy • Galaxy Clusters and the Intracluster Medium • Supernova Remnants • Supernovae • SN 1987A

LEADERSHIP AND MANAGEMENT EXPERIENCE

Director of Operations, CIERA 2017 – current

Coordinate operations of research center supporting ~100 faculty, postdocs, and students.

Management responsibilities and experience includes:

- Supervise staff team of 6
- Assist with long term strategy and financial planning
- Oversee all center financial activity
- Manage all physical office space
- Direct and oversee center programming, including seminar series, public outreach, website, and more

Penn State Postdoc Research Exhibition Planning Committee 2016

Organized and ran interdisciplinary lightning talk competition

Penn State Postdoctoral Society 2015 – 2017

Council Chair 2016 - 2017, Executive Council Member 2015 - 2016

Purdue Physics Graduate Student Association 2012 – 2013

Co-founder, Chair of Research Progress and Human Relations,
author of inaugural constitution defining organization structure and bylaws

Purdue Physics Graduate Program Improvement Initiative 2012

Survey and focus group design, execution, and reporting in 2 weeks,
collaboration with faculty to implement changes in graduate program

Society of Physics Students 2002 – 2006

Luther College Chapter, Vice President 2005 – 2006

TEACHING AND MENTORING EXPERIENCE

Mentoring and supervision of 6 undergraduate work study office assistants Northwestern University	2017 – current
Mentoring of Postdoctoral Scholars in proposal writing Pennsylvania State University, Northwestern University	2017 – current
Supervisor of 5 Undergraduate Research Assistants Pennsylvania State University, Northwestern University	2014 – 2020
Private Physics Tutor Purdue University, Introductory Algebra-Based Physics	2009 – 2013
Graduate Teaching Assistant Purdue University, Introductory Astronomy for Non-Majors, Introductory Algebra-Based Physics, Introductory Algebra-Based Physics	2006 – 2007
Undergraduate Teaching Assistant Luther College	2006 – 2007

PROFESSIONAL SERVICE AND SOCIETIES

CIERA Diversity, Equity, and Inclusion Committee Member	2020 – current
American Astronomical Society Beyond Academe Task Force	2020 – current
Chandra X-ray Observatory Proposal Review Panel	2016, 2021
American Astronomical Society Employment Committee	2017 – 2021
Northwestern University Center and Institute Staff Appreciation Committee	2019
NASA Astrophysics Data Analysis Program Proposal Review Panel (2019 panel chair)	2015, 2019
NuSTAR X-ray Telescope Proposal Review Panel	2017
Referee for The Astrophysical Journal	
Suzaku X-ray Telescope Proposal Review Panel	2014
High Energy Astrophysics Division (HEAD) of the American Astronomical Society	2010 – current
American Astronomical Society	2008 – current

OUTREACH ACTIVITIES

Volunteer, CIERA Annual Public Lecture	2017, 2018, 2019, 2021
Co-Chair of Programming, 2019 APS Conference for Undergraduate Women in Physics at Northwestern	2018-2019
Volunteer, Girls4Science astronomy field trip to CIERA	February 2018
Presenter, NASA Museum Alliance Universe of Learning	April 2017
Presenter, NASA Museum Alliance Universe of Learning	April 2017
Guest Lecturer, Penn State Workshop for Teachers	July 2016
Volunteer, Penn State Astrofest	July 2013,2014,2015,2016,2017
Judge, Pennsylvania Junior Academy of Science Competition	May 2016

HONORS AND AWARDS

Lijuan Wang Memorial Award <i>Purdue Outstanding Female Physics Graduate Student</i>	2011
Gary L. Wright Memorial Fellowship <i>Purdue Physics Department</i>	2009
Purdue Leadership in Physics Award	2007
Phi Beta Kappa	2006
Pi Mu Epsilon <i>National Mathematics Honor Society</i>	2005
Herman E. Ellingson Memorial Prize in Physics <i>Luther College Outstanding Junior Physics Major</i>	2005
Sigma Pi Sigma <i>National Physics Honor Society</i>	2004

AWARDED PROPOSALS

- High Resolution Spectroscopy of SN 1987A** 2018
Chandra X-ray Observatory proposal (#19500478)
PI, 340 ks
- Chandra Cycle 19 Spatial and Spectral Monitoring of SN 1987A** 2018
Chandra X-ray Observatory proposal (#19500021)
Co-I, primary observer, 70 ks
- Chandra Cycle 18 Spatial and Spectral Monitoring of SN 1987A** 2017
Chandra X-ray Observatory proposal (#18500433)
Co-I, primary observer, 140 ks
- The Continuing Fall of SN 1987A** 2016
Spitzer Space Telescope Cycle 13 proposal (#13004)
Co-I, 0.8 hours
- Probing Plasma Properties in Supernova Remnants Observed by XMM-Newton** 2015-2019
NASA Astrophysics Data Analysis Program (14-ADAP14-0265)
Science PI, \$447k
- Chandra Cycle 17 Spatial and Spectral Monitoring of SN 1987A** 2016
Chandra X-ray Observatory proposal (#17500197)
Co-I, primary observer, 140 ks
- Chandra Cycle 16 Spatial and Spectral Monitoring of SN 1987A** 2015
Chandra X-ray Observatory proposal (#16500118)
Co-I, 140 ks
- SN 1987A: On the wane?** 2015
Spitzer Space Telescope Cycle 11 proposal (#11023)
Co-I, 0.8 hours

PUBLICATIONS

* indicates undergraduate mentee authors

1. *Can the Fe K-alpha Line Reliably Predict Supernova Remnant Progenitors?*
*Siegel, J., Dwarkadas, V. V., **Frank, K. A.**, Burrows, D. N. 2021, *Astrophysical Journal*, 922, 67
2. *Spectral Evolution of the X-Ray Remnant of SN 1987A: A High-resolution Chandra HETG Study*
Ravi, A.P., Park, S., Zhekov, S.A., Miceli, M., Orlando, S., **Frank, K. A.**, Burrows, D. N. 2021, *Astrophysical Journal*, 922, 140
3. *Analysis of XMM-Newton Observations of Supernova Remnant W49B and Clues to the Progenitor*
*Siegel, J., Dwarkadas, V. V., **Frank, K. A.**, Burrows, D. N. 2020, *Astrophysical Journal*, 904, 175
4. *Smoothed particle inference analysis and abundance calculations of DEM L71, and comparison to SN explosion models*
*Siegel, J., Dwarkadas, V. V., **Frank, K. A.**, Burrows, D. N., *Panfichi, A. 2020, *Astronomische Nachrichten*, 341, 163
5. *Smoothed Particle Inference Analysis of SNR DEM L71*
Frank, K. A., Dwarkadas, V., *Panfichi, A., *Crum, R. M., Burrows, D. N. 2019, *Astrophysical Journal*, 875, 14
6. *Astronomy-driven Careers in the 2020's*
Kamenetzky, J., Kastner, J., Avestruz, C., Crocker, A., Green, J., Frank, E., **Frank, K.** Hess, K., Kepley, A., Montez, R., Revalski, M., Shahady, K., Weston, J. 2019, *Astro2020: Decadal Survey on Astronomy and Astrophysics*, APC white papers, no. 5; *Bulletin of the American Astronomical Society*, 51, 5
7. *Collisionless shock heating of heavy ions in SN 1987A*
Miceli, M., Orlando, S., Burrows, D. N., **Frank, K. A.**, Argiroffi, C., Reale, F., Peres, G., Petruk, O., Bocchino, F. 2019, *Nature Astronomy*, 3, 236

8. *The 30 Year Search for the Compact Object in SN 1987A*
Alp, D., Larsson, J., and 19 co-authors including **Frank, K. A.** 2018, *Astrophysical Journal*, 864, 174
9. *Chandra Observes the End of an Era in SN 1987A*
Frank, K. A., Zhekov, S. A., Park, S., McCray, R., Dwek, E., & Burrows, D. N. 2016, *Astrophysical Journal*, 829, 40
(Featured in nasa.gov press release, February 24, 2017, leading to articles on the Institute of Physics's physicsworld.com and other news outlets)
10. *Infrared Continuum and Line Evolution of the Equatorial Ring around SN 1987A*
Arendt, R. G., Dwek, E., Bouchet, P., Danziger, I. J., **Frank, K. A.**, Gehrz, R. D., Park, S., Woodward, C. E. 2016, *Astronomical Journal*, 151, 62
11. *Chandra Observations of SNR RCW 103*
Frank, K. A., Burrows, D. N., & Park, S. 2015, *Astrophysical Journal*, 810, 113
12. *Mapping High-Velocity H α and Ly α Emission from Supernova 1987A*
France, K., McCray, R., Fransson, C., Larsson, J., **Frank, K. A.**, et al. 2015, *Astrophysical Journal Letters*, 801, L16
13. *Characterization of the ICM Temperature Distributions of 62 Galaxy Clusters with XMM-Newton*
Frank, K. A., Peterson, J. R., Andersson, K., Fabian, A. C., & Sanders, J. S. 2013, *Astrophysical Journal*, 764, 46
14. *Deep High-Resolution X-ray Spectra from Cool-Core Clusters*
Sanders, J. S., Fabian, A. C., **Frank, K. A.**, Peterson, J. R., & Russell, H. R. 2010, *Monthly Notices of the Royal Astronomical Society*, 402, 127

SELECT PRESENTATIONS

Selections from a total of 17 poster and 20 oral presentations

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| <i>SPI Analysis and Abundance Calculations of DEM L71 and W49B, and Comparison to SN explosion Models</i>
Poster at American Astronomical Society 235th Meeting, Honolulu, Hawaii | January 2020 |
| <i>A More Complete View of Supernova Remnants</i>
Invited Talk, Goddard Space Flight Center, Astrophysics Science Division Colloquium, Greenbelt, Maryland | November 2019 |
| <i>A More Complete View of Supernova Remnants</i>
Talk at Fifty-One Erg, Corvallis, Oregon | June 2017 |
| <i>Exploring Supernova Remnants with the SPIES Project</i>
Poster at American Astronomical Society 229th Meeting, Grapevine, Texas | June 2017 |
| <i>Chandra Observations of SN 1987A: An Unprecedented View of the Life and Death of a Blue Supergiant</i>
Talk at Chandra Science for the Next Decade Workshop, Cambridge, Massachusetts | August 2016 |
| <i>A New Approach to X-ray Analysis of SNRs</i>
Talk at Supernova Remnants: An Odyssey in Space After Stellar Death, Chania, Crete, Greece | June 2016 |
| <i>SN 1987A: Chandra Witnesses the End of an Era</i>
Talk at American Astronomical Society 227th Meeting, Kissimmee, Florida | January 2016 |
| <i>15 Years of SN 1987A with Chandra</i>
Talk for Pennsylvania State University Astronomy and Astrophysics Seminar, State College, Pennsylvania | February 2015 |
| <i>Chandra Observations of SN 1987A</i>
Talk at 15 Years of Science with Chandra Symposium, Boston, Massachusetts | November 2014 |
| <i>Chandra Observations of SN 1987A</i>
Talk at Supernovae in the Local Universe: Celebrating 10,000 days of Supernova 1987A, Coffs Harbour, New South Wales, Australia | August 2014 |

Characterization of ICM Temperature Distributions of 62 Galaxy Clusters with XMM-Newton
Talk at American Astronomical Society 223rd Meeting, Washington, D.C.

January 2014

Chandra Observations of SNR RCW 103
Poster at American Astronomical Society 223rd Meeting, Washington, D.C.

January 2014