

## **Jeremy Hare, Ph.D.**

Pronouns: he/him/his

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### **EDUCATION**

**Ph.D. in Physics, 2012-2018**, The George Washington University, Washington D.C.

**Dissertation Title:** *Search, Identification, and Study of Galactic Compact Objects: Methods, Environments, and Populations*

**MPhil in Physics, May 2017**, The George Washington University, Washington D.C.

**B.S. in Physics, April 2011**, University of Pittsburgh, Pittsburgh, PA  
Graduated Cum Laude

**B.S. in Applied Mathematics, April 2011**, University of Pittsburgh, Pittsburgh, PA  
Graduated Cum Laude

### **POSITIONS HELD**

**NASA Postdoctoral Program Fellow: October 2019-Current**  
NASA Goddard Space Flight Center, Greenbelt, MD

**NuSTAR Postdoctoral Researcher: September 2018-September 2019**  
University of California, Berkeley, Berkeley, CA

**Graduate Research Assistant: May 2014-September 2018**  
The George Washington University, Washington, D.C.

**Graduate Teaching Assistant, August 2012-May 2014**  
The George Washington University, Washington, D.C.

**Graduate Student Intern, June 2013-August 2013**  
NASA Goddard Space Flight Center, Greenbelt, Maryland

### **RESEARCH EXPERIENCE**

**Multi-wavelength studies of pulsars, unidentified GeV/TeV sources using machine learning, and high mass gamma-ray binaries, November 2013-September 2018**  
The George Washington University, Washington, D.C.  
Advisor- Oleg Kargaltsev, Ph.D.

**Multi-wavelength studies of unidentified Fermi gamma-ray sources, June 2013-August 2013**  
NASA Goddard Space Flight Center, Greenbelt, Maryland  
Advisor- John Hewitt, Ph.D.

**Experimental Nuclear Physics, June 2012-July 2012**  
Johannes Gutenberg University of Mainz, Mainz, Germany  
Advisor- William Briscoe, Ph.D.

## REFEREED PUBLICATIONS

### First and Second Author:

Yang, H., **Hare, J.**, Kargaltsev, O., Volkov, I., Chen, S., Rangelov, B. “Classifying Unidentified X-ray Sources in the Chandra Source Catalog Using a Multi-wavelength Machine Learning Approach” Accepted for publication in *ApJ* (Sept. 2022)

**Hare, J.**, Volkov, I., Pavlov, G. G., Kargaltsev, O., Johnston, S., “Precise timing and phase-resolved spectroscopy of the young pulsar J1617-5055 with NuSTAR” *ApJ*, 923, 249 (Dec. 2021)

**Hare, J.**, Halpern, J. P., Tomsick, J. A., Thorstensen, J. R., Bodaghee, A., Clavel, M., Krivonos, R., Mori, K., “Chandra, NuSTAR, and Optical Observations of the Cataclysmic Variables IGR J17528-2022 and IGR J20063+3641” *ApJ*, 914, 85 (June 2021)

**Hare, J.**, Tomsick, J. A., Buisson, D. J. K., Clavel, M., Gandhi, P., Garcia, J. A., Grefenstette, B. W., Walton, D. J., Xu, Y., “NuSTAR observations of the Transient Galactic Black Hole Binary Candidate Swift J1858.6–0814: a new sibling of V404 Cyg and V4641 Sgr?” *ApJ*, 890, 57 (Feb. 2020)

**Hare, J.**, Kargaltsev, O., Pavlov, G., Beniamini, P., “Evolution of the extended X-ray emission from the PSR B1259-63/LS 2883 binary in the 2014-2017 binary cycle” *ApJ*, 882, 74 (Sept. 2019)

**Hare, J.**, Halpern, J., Clavel, M., Grindlay, J., Rahoui, F., Tomsick, J., “Chandra, MDM, Swift, and NuSTAR observations confirming the SFXT nature of IGR J19498+2534” *ApJ*, 878, 15 (June 2019)

**Hare, J.**, Volkov, I., Kargaltsev, O., Younes, G., Rangelov, B., “XMM-Newton and Chandra observations of the unidentified Fermi-LAT source 3FGL J1016.5-6034: A young pulsar with a nebula?” *ApJ*, 875, 107 (April 2019)

**Hare, J.**, Kargaltsev, O., & Rangelov, B., “Chandra X-ray Observatory and Hubble Space Telescope observations of the intermediate-age cluster GLIMPSE-C01” *ApJ*, 865, 33 (Sept. 2018)

**Hare, J.**, Kargaltsev, O., Pavlov, G. G., Rangelov, B., & Volkov, I., “Chandra Observations of the Field Containing HESS J1616-508” *ApJ*, 841, 81 (June 2017)

**Hare, J.**, Rangelov, B., Sonbas, E., Kargaltsev, O., & Volkov, I. “Multi-wavelength study of HESS J1741-302” *ApJ*, 816, 2 (Jan. 2016)

Pavlov, G. G., **Hare, J.**, Kargaltsev, O., Rangelov, B., & Durant, M., “An extended X-ray object ejected from the PSR B1259-63/LS 2883 binary” *ApJ*, 806, 2 (June 2015)

### Contributing Author:

Richardson, N., Pavao, C., Eldridge, J., J., Pablo, H., Chene, A., Wysocki, P., Gies, D., R., Younes, G., **Hare, J.** “A high-mass X-ray binary descended from an ultra-stripped supernova” *Submitted to Nature* (Aug. 2022)

Chen, S., Kargaltsev, O., Yang, H., **Hare, J.**, Volkov, I., Rangelov, B., Tomsick, J. “Population of X-ray Sources in the Intermediate-Age Cluster NGC 3532: a Test Bed for Machine-Learning Classification” *Submitted to ApJ* (Aug. 2022)

Connors, R. M. T., Garcia, J. A., Tomsick, J., Mastroserio, G., Grinberg, V., Steiner, J. F., Jiang, J., Fabian, A. C., Parker, M. L., Harrison, F., **Hare, J.**, Mallick, L., Lazar, H. “The long-stable hard state of XTE J1752-223 and the disk truncation dilemma” *Accepted for publication in ApJ* (July 2022)

Klingler, N., Kargaltsev, O., Pavlov, G., Ng, C.-Y., Gong, Z., **Hare, J.**, “The Goose’ Pulsar Wind Nebula of PSR J1016–5857: The Birth of a Plerion” *ApJ*, 932, 89 (June 2022)

Coughenour, B., Tomsick, J. A., Shaw, A. W., Muka, K., Clavel, M., **Hare, J.**, Krivonos, R., Fornasini, F. M., “Confirming the IP nature of IGR J18007-4146 with measurements of the white dwarf mass and spin using XMM and NuSTAR” *MNRAS*, 511, 4582 (Apr. 2022)

Pike, S. N., Negoro, H., Tomsick, J. A., Bachetti, M., Brumback, M., Connors, R. M. T., Garcia, J. A., Grefenstette, B., **Hare, J.**, Harrison, F. A., Jaodand, A., Ludlam, R. M., Mastroserio, G., Mihara, T., Shidatsu, M., Sugizaki, M., Takagi, R., “MAXI and NuSTAR observations of a low-luminosity X-ray transient in the GLIMPSE-C01 Cluster” *ApJ*, 927, 190 (March. 2022)

Kargaltsev, O., Klingler, N., **Hare J.**, Volkov, I., “X-ray imaging observations of the high-mass gamma-ray binary HESS J0632+057” *ApJ*, 925, 20 (Jan. 2021)

Lazar, H., Tomsick, J. A., Pike, S. N., Bachetti, M., Buisson, D. J. K., Connors, R. M. T., Fabian, A. C., Fuerst, F., Garca, J. A., **Hare, J.**, Jiang, J., Shaw, A. W., Walton, D. J. “Spectral and Timing Analysis of NuSTAR and Swift/XRT Observations of the X-Ray Transient MAXI J0637-430” *ApJ*, 921, 155 (Nov. 2021)

Tomsick J. A., Coughenour B. M., **Hare J.**, Krivonos R., Bodaghee A., Chaty S., Clavel M., Fornasini F. M., Rodriguez J., Shaw A. W. “Using Chandra Localizations and Gaia Distances and Proper Motions to Classify Hard X-ray Sources Discovered by INTEGRAL” *ApJ*, 914, 48 (June 2021)

Buisson D. J. K., Altamirano D., Armas Padilla M., Arzoumanian Z., Bult P., Castro Segura N., Charles P. A., Degenaar N., Daz Trigo M., van den Eijnden J., Fogantini F., Gandhi P., Gendreau K., **Hare J.**, Homan J., Knigge C., Malacaria C., Mendez M., Munoz Darias T., Ng M., Ozbey Arabaci M., Remillard R., Strohmayer T. E., Tombesi F., Tomsick J. A., Vincentelli F., Walton D. J. “Dips and eclipses in the X-ray binary Swift J1858.6-0814 observed with NICER” *MNRAS*, 503, 5600 (June 2021)

Volkov I., Kargaltsev O., Younes G., **Hare J.**, Pavlov G. “NuSTAR observation of LS 5039” *ApJ*, 915, 61 (July 2021)

Connors R. M. T., García J. A., Tomsick J., **Hare J.**, Dauser T., Grinberg V., Steiner J. F., Mastroserio G., Sridhar N., Fabian A. C., Jiachen J., Parker M. L., Harrison F., Kallman T. R. “Reflection Modeling of the Black Hole Binary 4U 1630-47: The Disk Density and Returning Radiation” *ApJ*, 909, 146 (March 2021)

Grefenstette B. W., Ludlam R. M., Thompson E. T., García J. A., **Hare J.**, Jaodand A. D., Krivonos R. A., Madsen K. K., Mastroserio G., Slaughter C. M., Tomsick J. A., Wik D., Zoglauer A. “StrayCats: A Catalog of NuSTAR Stray Light Observations” *ApJ*, 909, 30 (March 2021).

Buisson, D. J. K., Altamirano, D., Bult, P., Mancuso, G. C., Gver, T., Jaisawal, G. K., **Hare, J.**, Albayati, A. C., Arzoumanian, Z., Castro Segura, N., Chakrabarty, D., Gandhi, P., Guillot, S., Homan, J., Gendreau, K. C., Jiang, J., Malacaria, C., Miller, J. M., zbey Arabac?, M., Remillard, R. Strohmayer, T. E., Tombesi, F., Tomsick, J. A., Vincentelli, F. M., Walton, D. J. “Discovery of thermonuclear (Type I) X-ray bursts in the X-ray binary Swift J1858.6-0814 observed with NICER and NuSTAR” *MNRAS*, 499, 793 (Nov. 2020)

Shaw, A. W., Heinke, C. O., Mukai, K., Tomsick, J. A., Doroshenko, V., Suleimanov, V. F., Buisson, D. J. K., Gandhi, P., Grefenstette, B. W., **Hare, J.**, Jiang, J., Ludlam, R. M., Rana, V., Sivakoff, G. R. “Measuring the masses of magnetic white dwarfs: A NuSTAR Legacy Survey” *MNRAS*, 498, 3457 (Nov. 2020)

Klingler, N., Yang, H., **Hare, J.**, Kargaltsev, O., Pavlov, G. G., Posselt, B., “Chandra Monitoring of the J1809-1917 Pulsar Wind Nebula and Its Field” *ApJ*, 901, 157. (Oct. 2020)

Mori, K., An, H., Feng, Q., Malone, K., Prado, R. R., Schutt, Y. E., Dingus, B. L., Gotthelf, E. V., Hailey, C. J., **Hare, J.**, Kargaltsev, O., Mukherjee, R., “Multiwavelength Observations of 2HWC J1928+177: Dark Accelerator or New TeV Gamma-Ray Binary?” *ApJ*, 897, 129 (July 2020)

Xu, Y., Harrison, F. A., Tomsick, J. A., **Hare, J.**, Fabian, A. C., Walton, D. J., “Evidence for Disk Truncation at Low Accretion States of the Black Hole Binary MAXI J1820+070 Observed by NuSTAR and XMM-Newton” *ApJ* 893, 42 (April 2020)

Xu, Y., Harrison, F. A., Tomsick, J. A., Walton, D. J., Barret, D., Garcia, J. A., **Hare, J.**, Parker, M. L., “Studying the reflection spectra of the new black hole X-ray binary candidate MAXI J1631-479 observed by NuSTAR: A variable broad iron line profile” *ApJ*, 893, 30 (April 2020)

Tomsick, J. A., Bodaghee, A., Sylvain, C., Clavel, M., Fornasini, F. M., **Hare, J.**, Krivonos, R., Rahoui, F., Rodriguez, J., “Chandra Observations of High-energy X-Ray Sources Discovered by INTEGRAL” *ApJ*, 889, 53 (Jan. 2020)

Clavel, M., Tomsick, J. A., **Hare, J.**, Krivonos, R., Mori, K., Stern, D., “NuSTAR observations of the unidentified INTEGRAL sources: constraints on the Galactic population of HMXBs”, *ApJ*, 887, 32 (Dec. 2019)

Arumugasamy, P., Kargaltsev, O., Posselt, B., Pavlov, G., **Hare, J.**, “Possible phase-dependent absorption feature in the x-ray spectrum of the middle-aged PSR J0659+ 1414” *ApJ*, 869, 97 (Dec. 2018)

Pannuti, T. G., Rho, J., Kargaltsev, O., Rangelov, B., Kosakowski, A. R., Winkler, F., Keohane, J. W., **Hare, J.**, & Ernst, S., “CTIO, ROSAT HRI, and Chandra ACIS Observations of the Archetypical Mixed-morphology Supernova Remnant W28 (G6.4-0.1)” *ApJ*, 839, 59 (April 2017)

Sonbas, E., Rangelov, B., Kargaltsev, O., Dhuga, K. S., **Hare, J.** & Volkov, I., “X-ray Sources in the Dwarf Spheroidal Galaxy Draco” *ApJ*, 821, 54 (April 2016)

Rangelov, B., Posselt, B., Kargaltsev, O., Pavlov, G. G., **Hare, J.**, & Volkov, I., “Multiwavelength Study of the Northeastern Outskirts of the Extended TeV Source HESS J1809193”, *ApJ*, 796, 34 (Nov. 2014)

Kargaltsev, O., Pavlov, G. G., Durant, M., Volkov, I., & **Hare, J.**, “The Dynamic X-Ray Nebula Powered by the Pulsar B1259-63”, *ApJ*, 784, 124 (April 2014)

Kargaltsev, O., Rangelov, B., **Hare, J.**, & Pavlov, G. G. “Chandra imaging of gamma-ray binaries”, *Astronomische Nachrichten*, 335, 301, (March 2014)

## NON-REFEREED PUBLICATIONS

Gobat, C., Yang, H., Kargaltsev, O., **Hare, J.**, Volkov, I. “Catalog of X-ray Detected Be Stars (XDBS)” *RNAAS*, 6, 163 (July 2022)

**Hare, J.**, Kargaltsev, O., Cenko, S. B., Klingler, N. J., “X-Rays from V723 Mon are due to Optical Loading in Swift XRT” *RNAAS*, 5, 259 (Nov. 2021)

Yang H., **Hare J.**, Volkov I., Kargaltsev O., “Visualizing Multi-wavelength Properties of Classified X-ray Sources from Chandra Source Catalog” *RNAAS*, 5, 102 (May 2021)

**Hare J.**, Yang H., Kargaltsev O., Rangelov B., Pike S. N., Tomsick, J., “Chandra Observations of MAXI J1848-015 prior to its outburst and a possible NIR counterpart” *The Astronomer’s Telegram*, 14499 (March 2021)

Buisson, D. J. K., **Hare, J.**, Guver, T., Altamirano, D., Gendreau, K. C., Arzoumanian, Z., Bult, P. M., Strohmayer, T. E., Castro Segura, N., Garcia, Javier A., Remillard, R. A., Tomsick, J. A., Chenevez, J., Jaisawal, G. K., Ozbey Arabaci, M., Vincentelli, F., Homan, J., Guillot, S., Wolff, M. T., Chakrabarty, D. Ng, M., “NICER and NuSTAR detections of Type I bursts and periodic dips in Swift J1858.6-0814” The Astronomer’s Telegram, 13563 (March 2020)

Tomsick, J. A., Garcia, J., Fabian, A., Walton, D., Jiang, J., Fuerst, F., Buisson, D., Shaw, A., **Hare, J.**, Bachetti, M., Connors, R., Gandhi, P., Xu, Y. “A NuSTAR Observation of MAXI J0637-430: A New X-ray Transient and Likely Black Hole X-ray Binary” The Astronomer’s Telegram, 13270 (Nov. 2019)

Pavlov, G. G., **Hare, J.**, & Kargaltsev, O., “High-speed Ejecta from the Gamma-ray Binary PSR B1259-63/LS 2883” 2019, arXiv:1903.00781 (March 2019)

**Hare, J.**, Gandhi, P., Paice, J. A., & Tomsick, J., “NuSTAR shows continued X-ray activity of Swift J1858.6-0814 in an unusual spectral state” 2019, The Astronomer’s Telegram, 12512 (Feb. 2019)

## JOURNAL REFEREE

MNRAS 2019-Current

ApJ 2020-Current

The Physics Teacher 2020-Current

## PEER REVIEW PANELS

Subject-matter expert reviewer in a NASA Peer Review (2022)

NASA Neil Gehrels Swift Observatory Cycle 16 panel

NASA Fermi Gamma-ray Observatory Cycle 13 panel

NASA Fermi Gamma-ray Observatory Cycle 14 panel

NASA NICER Cycle 2 panel

NASA Chandra X-ray Observatory Cycle 22 panel

## INVITED TALKS

**Hare, J.** “*Stellar clusters: compact objects and source populations*”, AXIS CO/SNR science working group, Online (July 2022)

**Hare, J.** “*A dragon out of breath? Monitoring High velocity outflows from the high mass gamma-ray binary LS 2883/PSR B1259-63*”, Naval Research Lab Astrophysics Talk (May 2022)

**Hare, J.** “*Finding Needles in Wide Field Survey Haystacks*”, Pennsylvania State University Astronomy and Astrophysics colloquium (Apr. 2022)

**Hare, J.**, “*High-mass gamma-ray binaries in X-rays: PSR B1259-63 and others*”, Columbia high-energy astrophysics group seminar (Mar. 2018)

## CONFERENCES & PRESENTATIONS

**Hare, J.**, Kargaltsev, O., Younes, G., Volkov, I., Rangelov, B., “Chandra observations of the pulsar candidate 4FGL J1015.5-6030” 19<sup>th</sup> High Energy Astrophysics Division Meeting (Mar. 2022)

**Hare, J.**, Kargaltsev, O., Pavlov, G. G., Volkov, I., “NuSTAR observations of two young and energetic pulsars” Poster at IAU symposium 363: Neutron Star Astrophysics at the Crossroads: Magnetars and the Multimessenger Revolution (Nov. 2021)

**Hare, J.**, Yang, H., Volkov, I., Kargaltsev, O., “Crowdsourcing X-ray source catalogs with an eye towards machine learning” Talk at the Chandra Data Science Conference (August 2021)

- Hare, J.**, Yang, H., Kargaltsev O., Volkov I., “Automated Classification of X-ray sources within the extent of Fermi-LAT sources” Poster at the Ninth international Fermi symposium (April 2021)
- Hare, J.**, Tomsick J., Garca, J., Walton, D., Fuerst, F., Shaw, A., Clavel, M., Fabian, A., Harrison, F., Fryer, C., Miller, J., Parker, M., Pottschmidt, K., Xu, Y., Wilms, J., “The black hole transient Swift J1858.6-0814: a new V404 Cyg analog?” Poster at the 17th HEAD meeting (March 2019)
- Hare, J.**, Kargaltsev, O., Bettina P., Pavlov, G., Volkov, I., “X-ray emission from AR Scorpii”, Poster at the 17th HEAD meeting (March 2019)
- Hare, J.**, Kargaltsev, O., Rangelov, B., Pavlov, G., Posselt, B., & Volkov, I., “Searching for compact objects within X-ray catalogs using Machine Learning” Dissertation Talk at 233rd AAS meeting (Jan. 2019)
- Hare, J.**, Kargaltsev, O., Rangelov, B., “A multi-wavelength study of the massive GLIMPSE-C01 cluster with the Hubble Space Telescope and Chandra X-ray Observatory” 231st AAS meeting (Jan. 2018)
- Hare, J.**, Kargaltsev, O., Rangelov, B., Pavlov, G., Posselt, B., & Volkov, I., “Multiwavelength classification of Galactic X-ray sources using machine-learning” 231st AAS meeting (Jan. 2018)
- Hare, J.**, Kargaltsev, O., Pavlov, G., “Chandra monitoring of high-velocity ejecta from high-mass gamma-ray binary LS 2883/PSR B1269-63” Cosmic Accelerators Conference (Nov. 2017)
- Hare, J.**, Kargaltsev, O., Rangelov, B., Pavlov, G., Posselt, B., Volkov, I., “A Machine-learning approach to classification of X-ray sources”, 16th High Energy Astrophysics Division Meeting (Aug. 2017)
- Hare, J.**, Kargaltsev, O., Pavlov, G., “Peculiar plasma ejections from the high mass gamma-ray binary PSR B1259-63”, Variable Galactic Gamma-Ray Sources (IV) (July 2017)
- Hare, J.**, Kargaltsev, O., Rangelov, R., Townsley, L., Broos, P., “Chandra X-ray Observatory and Hubble Space Telescope Observations of the Cluster Glimpse-C01”, JWST Proposal Preparation Workshop information (May 2017)
- Hare, J.**, Rangelov, B., Kargaltsev, O., Volkov, I., & Pavlov, G. G., “A Multi-Wavelength Machine Learning Approach to Classify Unidentified X-ray Sources”. The George Washington University Research Days 2017 (April 2017)
- Hare, J.**, Kargaltsev, O., Pavlov, G., Rangelov, B., Volkov, I., Hall, C., “Using Machine Learning to Uncover the Nature of TeV Sources”, Fermi-Veritas-HAWC Workshop (March 2017)
- Hare, J.**, Kargaltsev, O., Rangelov, B., Pavlov, G. G., Volkov, I., & , “Searching for Unique Objects in X-ray Catalogs using Machine Learning”, Detecting the Unexpected (Feb. 2017)
- Hare, J.**, Kargaltsev, O., Rangelov, B., Pavlov, G. G., Volkov, I., & , “Application of Machine-learning Techniques to Understand the Nature of X-ray and Gamma-ray Sources” 2016, IAU Symposium #325 on Astroinformatics (Oct. 2016)
- Hare, J.**, Rangelov, B., Kargaltsev, O., Volkov, I., & Pavlov, G. G., “Machine-learning approach to multi-wavelength classification of high-energy sources”. Statistical Challenges in Modern Astronomy VI (June 2016)
- Hare, J.**, Kargaltsev, O., Pavlov, G. G., & Rangelov B., “Extended X-ray object ejected from the PSR B1259-63/LS 2883 binary”, *Sixth International Fermi Symposium* (Nov. 2015)

**Hare, J.**, Rangelov, B., Kargaltsev, O., Volkov, I., & Pavlov, G. G., “Applying machine-learning to understand the nature of gamma-ray sources”, *IAU General Assembly*, 22, (Aug. 2015), #2258368

**Hare, J.**, Rangelov, B., Kargaltsev, O., Volkov, I., & Pavlov, G. G., “Unveiling the Nature of High Energy Sources Using Machine Learning”. DC/MD/VA Astrophysics Summer Meeting for Graduate Students (June 2015)

**Hare, J.**, Rangelov, B., Posselt, B., Kargaltsev, O., & Pavlov, G. G., “The Dynamic X-ray Nebula Powered by the Pulsar B1259-63” and “Chandra and Suzaku Observations of Two Galactic TeV Sources”. DC/MD/VA Astrophysics Summer Meeting for Graduate Students (July 2014)

**Hare, J.**, Rangelov, B., Posselt, B., and Kargaltsev, O., & Pavlov, G. G., “Chandra and Suzaku observations of two galactic TeV sources”. *American Astronomical Society Meeting Abstracts*, 223, (Jan. 2014), 153.21

**Hare, J.**, Rangelov, B., Posselt, B., and Kargaltsev, O., & Pavlov, G. G., “Chandra and Suzaku observations of two galactic TeV sources”. The George Washington University Research Days 2014 (April 2014)

**Hare, J.**, Rangelov, B., Kargaltsev, O., Volkov, I., & Pavlov, G. G., “The Cosmic Snail: Spiral Structure from the Intra-Binary Shock of the Gamma-Ray Binary B1259-63”. DC/MD/VA Astrophysics Summer Meeting for Graduate Students (June 2013)

**Hare, J.**, Rangelov, B., Kargaltsev, O., Volkov, I., & Pavlov, G. G., “The Cosmic Snail: Spiral Structure from the Intra-Binary Shock of the Gamma-Ray Binary B1259-63”. The George Washington University Research Days 2013 (April 2013)

## PROFESSIONAL DEVELOPMENT

### **JWST Proposal Preparation Workshop information, May, 2017**

Space Telescope Science Institute, Baltimore, Maryland

- Learned how to plan and create observations for JWST using APT
- Learned how to use the exposure time calculator and other proposal planning tools

### **User Training in JWST Data Analysis II, November, 2016**

Space Telescope Science Institute, Baltimore, Maryland

- Learned about the specifications and uses of the instruments on JWST
- Learned how to use some of the preliminary software packages available for JSWT and played with simulated data

### **The 4th Annual DC/VA/MD Summer Astrophysics Meeting, July, 2016**

The George Washington University, Washington, D.C.

- Organized the annual conference for local graduate and undergraduate astrophysics students
- Chaired the conference

### **Summer School in Statistics for Astronomers, 2015**

Pennsylvania State University, State College, Pennsylvania

- Attended detailed statistics courses taught by both statisticians and astronomers
- Learned how to use the R statistics software package
- Learned how to properly integrate statistics into astronomy

### **NRAO Community Day at the Space Telescope Science Institute, April 2015**

Space Telescope Science Institute, Baltimore, Maryland

- Learned about some NRAO facilities and how they work (VLA and ALMA)
- Practiced reducing data with the CASA software

### **Astro Hack Week, September, 2014**

University of Washington, Seattle, Washington

- Hacked on a python version of Machine Learning pipeline
- Learned how to use the Sci-Kit Learn python package and applied it to our Chandra data set

### **Cottrell Scholars Collaborative National Teaching Assistant Workshop, May, 2014**

Georgia Institute of Technology, Atlanta, Georgia

- Discussed and developed plans (e.g., mentoring programs) to assist TAs in becoming more impactful in the classroom at GWU

### **Future Faculty Program, Fall, 2013**

The George Washington University, Washington, D.C.

- Weekly workshops on learning and implementing different innovative pedagogical techniques
- Focused on active learning

### **Fermi Summer School, May 2013 - June, 2013**

University of Delaware Conference Center, Lewes, DE

- Sponsored by NASA Goddard Space Flight Center
- Learned how to download and analyze Fermi Large Area Telescope (LAT) data
- Specific workshops on special techniques for analyzing Fermi LAT data

### **GWU Physics Department Colloquium, August 2012-2018**

The George Washington University, Washington, D.C.

- Colloquial talks given by distinguished speakers on a variety of topics in physics

## **PRESS RELEASES**

“PSR B1259-63: Pulsar Punches Hole In Stellar Disk”, NASA/CXC Media Release, July 2015

## **APPROVED OBSERVING AND ARCHIVAL PROGRAMS**

### **Principle Investigator**

NuSTAR Cycle 8 “Probing the High-energy Infrared connection for 4U 0142+61”

Chandra Cycle 23, “Measuring the Quiescent X-ray and Radio Luminosities of the Black Hole Binary MAXI J1820-070”

Chandra Cycle 21, “High-resolution Imaging and timing of 3FGL J1016.5-6034”

XMM-Newton Cycle 16, “Bright X-ray counterparts of galactic 3FGL sources”

XMM-Newton Cycle 20, “Investigating the Nature of Unidentified Galactic HAWC Sources” (Priority C)

NICER and NuSTAR TOO of Swift J1858.6-0814 in the non-flaring state

### **Co-Investigator**

Chandra Cycle 24 “A Census of Pulsar Wind Nebulae and Their Pulsars” (PI: Kargaltsev)

Hubble Cycle 30 “The legacy UV survey of 28 pulsars” (PI: Kargaltsev)

NuSTAR Cycle 8 “Probing Rapid Variability in Black Hole X-ray Binary Jets” (PI: Shaw)

NuSTAR Cycle 7 “A Magnetar in gamma-ray binary LS 5039?” (PI: Kargaltsev)

NuSTAR Cycle 7 “Spin and reflection in a black hole transient” (PI: Coughenour)

NuSTAR Cycle 7 “White dwarf masses and spin periods for hard X-ray selected Galactic sources” (PI: Tomsick)

JWST Cycle 1 “Infrared emission from magnetar 4U 0142+61: A dusty fallback disk?” (PI: Pavlov)

Swift Cycle 17, “Swift X-ray monitoring of the magnetar SGR 0755-2933” (PI: Younes)

NuSTAR Cycle 6, “NuSTAR study of PSR J1101-6101 and its remarkable Nebula” (PI: Klingler)

NuSTAR Cycle 6, “The Vela Pulsar and its PWN in hard X-Rays” (PI: Kargaltsev)

Chandra Cycle 22, “Magnetosphere-PWN Connection: Resolving the X-ray PWN around the MeV PSR J1849-0001” (PI: Kargaltsev)

Chandra Cycle 22, “Survey of Gamma-ray Pulsars” (PI: Rangelov)



Chandra Cycle 22, “The High Velocity Ejecta from a Gamma-ray Binary” (PI: Pavlov)  
NASA ADAP, “Multiwavelength Identification of Galactic High-Energy Sources” (PI: Kargaltsev)  
XMM-Newton Cycle 19 “External and internal heating in the old pulsar PSR B0950+08” (PI: Pavlov)  
NICER Cycle 1, “Is the brightest serendipitous NuSTAR source an UCXB and AMXP?” (PI:Tomsick)  
Chandra Cycle 20, “X-ray ejecta after the strongest gamma-ray flare in the PSR B1259-63/LS 2883 binary” (PI: Pavlov)  
Chandra Cycle 20, “The intermediate-age cluster GLIMPSE-C01” (PI: Rangelov)  
Chandra Cycle 20, “Discovering compact objects in intermediate age clusters” (PI: Kargaltsev)  
Chandra Cycle 20, “The Pulsar Wind Nebula of PSR J1016-5857” (PI: Klingler)  
Chandra Cycle 19, “Discovering extended sources in Chandra images” (PI: Kargaltsev)  
Chandra Cycle 19, “Revealing pulsars hidden in the 3rd Fermi Catalog” (PI: Rangelov)  
Chandra Cycle 18, “Mysterious ejecta from a high-mass gamma-ray binary” (PI: Pavlov)  
XMM-Newton Cycle 17, “HAWC source 2HWC J1928+177: A unique gamma-ray binary emitting 100 TeV photons?” (PI: Mori)  
XMM-Newton Cycle 16, “Snap-shot survey of INTEGRAL sources in the Galactic plane” (PI: Kargaltsev)  
XMM-Newton Cycle 15, “Sleuthing for compact objects accreting from the interstellar medium” (PI: Kargaltsev)  
XMM-Newton Cycle 15, “Snap-shot Survey of Fermi Pulsar Candidates” (PI: Kargaltsev)  
HST DDT, “Optical counterpart of high-speed ejecta from the gamma-ray binary LS 2883” (PI: Pavlov)

## **STUDENT SUPERVISION**

Steven Chen, 2020-Current (GWU Graduate Student)  
Hui Yang, 2019-Current (GWU Graduate Student)  
Haven Vu, 2019 (Undergraduate at UC Berkeley)  
Corrine Hall, 2016-2017 (High school student)

## **VOLUNTEER EXPERIENCE**

### **Adopt-a-physicist Outreach program, 2018, 2019, 2021**

Online

- Interacted with high school students and provided detailed answers to questions about my job/physics/academic trajectory

### **Cal Day, 2019**

Space Sciences Lab, Berkeley, CA

- Led tours of Space Sciences lab
- Discussed ongoing research at Space Sciences Lab with the general public

### **Astronomy Festival on the National Mall, June, 2014, 2015, 2016, 2017, and 2018**

The National Mall, Washington, D.C.

- Sponsored by Hofstra University
- Demonstrated models of astrophysical systems to the general public

### **Astronomy on Tap 2017**

DC9, Washington, D.C.

- Volunteered to help setup/run the event in the D.C. area

## **PROFESSIONAL SOCIETIES**

American Astronomical Society  
American Physical Society

## **HONORS & AWARDS**

**Gus W. Weiss Prize for Outstanding Student in Physics 2017**

Department of Physics, The George Washington University, Washington, D.C.

**2nd Place Physics/Mathematics Poster, GWU Research Days Poster Competition 2017**

Columbian College of Arts and Sciences, The George Washington University, Washington, D.C.

**Outstanding Graduate Teaching Assistant Award 2014**

Department of Physics, The George Washington University, Washington, D.C.