

Dr. Aarran Shaw

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EDUCATION AND PROFESSIONAL EXPERIENCE

August 2023 - present: Assistant Professor of Physics and Astronomy
Butler University, Indianapolis, USA

October 2019 - August 2023: Postdoctoral Research Fellow
University of Nevada, Reno, USA
Postdoctoral Supervisor: Prof. Richard M. Plotkin

November 2016 - October 2019: Postdoctoral Research Fellow
University of Alberta, Edmonton, Canada
Postdoctoral Supervisor: Prof. Craig O. Heinke

September 2012 - October 2016: PhD in Astrophysics
University of Southampton, Southampton, UK
Thesis title: Multi-wavelength Observations of Galactic Black Hole X-ray Transients (defended September 2016)
Supervisor: Prof. Philip A. Charles

September 2007 - July 2012: MPhys (with BSc) in Physics with Astrophysics (with Research Placement)
University of Leeds, Leeds, UK
Graduated with First Class Honours (equivalent to 4.0 GPA)

RESEARCH INTERESTS

Accretion physics; Black holes; Neutron stars; White dwarfs; X-ray binaries; Cataclysmic Variables; Timing and variability; Multi-wavelength observational astronomy

TEACHING EXPERIENCE

September 2012 - October 2016: Mayflower Scholar (Teaching Assistant and demonstrator)
University of Southampton, Southampton, UK

- 1st year course: Energy and Matter (also delivered revision lectures)
- 1st year course: Motion and Relativity
- 1st year course: Physics Skills (Experimental Labs)
- 2nd year course: Quantum Physics of Matter
- 2nd year course: Classical Mechanics
- 2nd year course: Physics from Evidence (Python labs)
- 3rd/4th year course: Computer Techniques in Physics (Advanced Python labs)

October 2019 - August 2023: Postdoctoral Research Fellow
University of Nevada, Reno, Reno, NV, USA

- AST 410: Astrophysics - guest lecture and cover
- PHYS 497: Senior Thesis - co-instructor

STUDENTS

Ava Covington (Summer 2020 - December 2021) - Ava is a UNR undergraduate who worked with me on investigating the low-flux states of intermediate polars. For the spring semester 2021 Ava won a Nevada Undergraduate Research Award to help fund the project. In March 2021, Ava was also selected to be an American Association of Variable Star Observers (AAVSO) ambassador. Under my supervision, Ava has also led an AAVSO observing campaign of intermediate polars to monitor for low-flux states. In October 2021, Ava was **awarded the Great Basin Observatory scholarship** as a result of her work on studying CVs with the Great Basin Observatory. In early 2022, as a sophomore, **Ava published her first, first-author paper on her CV research under my supervision.** In late 2022, **Ava was recommended by the UNR selection committee for the Sam Lieberman Regents' Award for Student Scholarship**, which is awarded annually to only *one undergraduate in the entire university*, owing to her research and leadership achievements

Alexis Tudor (Fall 2019 - Spring 2021; co-advisory role) - Alexis majored in Computer Science but worked in a cross-disciplinary fashion with Prof. Plotkin (her main advisor) and I through her senior year and Master's year to develop Photometry+, a photometric pipeline designed for use with the 0.7m Great Basin Observatory. During her Master's year, Alexis focused on the Human Computer Interaction (HCI) aspect of the software. She published her results in the proceedings of HCI International 2021 and presented Photometry+ at the 237th meeting of the American Astronomical Society and **also published a refereed journal paper in 2022.** As a result of her work on Photometry+, Alexis was awarded the 2020 Great Basin Observatory Scholarship Award and the 2021 UNR Graduate Student Association Outstanding Graduate Researcher Award. In May 2021, Alexis received her Master's degree and commenced a position as a software developer at L3Harris in Rockwall, TX.

Ben Pearson (Spring 2022 semester; co-instructor for senior thesis) - In spring semester 2022 I was a co-instructor for Ben's senior thesis. Ben expanded upon Alexis' work on Photometry+, developing an automated light curve generator component to the software which reduces and extract photometric data from new GBO images from our intermediate polar monitoring campaign on a daily basis. Ben successfully defended his Senior Thesis in May 2022.

Michael Larsen (Fall 2022 - Spring 2023 semester; co-instructor for senior thesis) - In fall semester 2022, Michael started working under my supervision. Michael used the NuSTAR X-ray telescope to search for populations of magnetic cataclysmic variables in globular clusters, and defended his senior thesis in spring 2023.

PUBLIC ENGAGEMENT

UNR; October 2019 - August 2023:

- 18 Nov 2022, public talk: "The James Webb Space Telescope," UNR Astronomy Club, Reno, NV
- 11 Aug 2022, public talk: "The James Webb Space Telescope," Clear Creek Tahoe, South Lake Tahoe, CA - part of a meteor shower viewing event.
- 17 July 2022, public talk: "The James Webb Space Telescope," Tahoe Star Tours, Northstar California Resort, CA
- 13-15 August 2021, Great Basin Observatory (GBO) 5th anniversary event. The UNR group presented their research to the public at an event celebrating the GBO's 5th anniversary.
- 11 August 2021, public talk: "Black holes don't suck," Clear Creek Tahoe, South Lake Tahoe, CA - part of a meteor shower viewing event.
- 11 March 2021, virtual school visit to the Grade 2 class of John C. Fremont Elementary School, Carson City NV - ask an astronomer Q&A session.
- "Virtual coffee break" discussion for the GBO. I talk about how I use the Great Basin National Park's 0.7m telescope for my research, in an informal and accessible setting. This series was set up by the GBO as a way to engage with the public during COVID-19: <https://youtu.be/aw5B7h0rZGg>.

U of A; November 2016 - October 2019:

- 10 September 2018, public talk: "Black holes don't suck," Royal Astronomical Society of Canada regular meeting.
- 16 May 2018, public talk: "Radio Astronomy through the ages," Northern Alberta Radio Club monthly meeting.
- 16 March 2017, public talk: "Life after death: The violent nature of black holes," University of Alberta public observing evening.

- Interview for “Astro 101: Black Holes” online course, short videos discussing black holes and neutron stars. Available on YouTube.

University of Southampton; September 2012 - October 2016:

- Team member, ‘Southampton Astrodome’ - Inflatable planetarium shows at primary and secondary schools, University open days, BBC stargazing live open evenings. Other duties included leading astronomy demonstrations at National Science Week at Winchester Science Centre.

AWARDS

Spring semester 2021: Nevada Undergraduate Research Award (NURA) mentor stipend

Awarded a stipend from the University of Nevada, Reno to mentor and advise Physics undergraduate Ava Covington during the 2021 spring semester. Ava won the NURA with a project to study and analyze the light curves of intermediate polars in low flux states.

July 2009 - August 2011: Summer Research Placement, Universities of Leeds and Leicester

Awarded stipend from University of Leeds Physics department to conduct a Research Placement for three years every summer. I gained valuable experience with observational astronomy in a research environment before commencing my PhD. In 2011 I studied Pulsar Wind Nebulae with the Fermi Gamma-ray Space Telescope at the University of Leicester.

PROFESSIONAL MEMBERSHIP

Member of the American Astronomical Society (AAS)

OTHER RELEVANT EXPERIENCE

Committee Member of the NuSTAR User’s Committee (2020-present)

Referee for Monthly Notices of the Royal Astronomical Society

Referee for the Astrophysical Journal

Referee for Astronomy & Astrophysics

Guest Reviewer for the Canadian Time Allocation Committee (CanTAC)

Reviewer for the NOIRLab Time Allocation Committee

Reviewer for the Swift Time Allocation Committee

Reviewer for the Chandra Time Allocation Committee

Reviewer (and Deputy Chair) for the NuSTAR Time Allocation Committee

Reviewer for the XRISM Guest Scientist Program

LOC for CASCA 2017, 29 May-1 June 2017, Edmonton, AB, Canada

HEX-P Pillar 1 – Accretion Power Science Working Group member

STROBE-X Science Working Group member

COMPUTING SKILLS

Data reduction packages: XSELECT, IRAF/pyRAF, Chandra CIAO, XMM-Newton SAS, ESOREX/REFLEX

Astronomy analysis software: HEASOFT/FTOOLS (including XSPEC and XRONOS), Starlink, DS9, T. R. Marsh’s software (Molly, Doppler), AstrOmatic software (SExtractor, SCAMP, SWarp), pgplot, GNUplot, ISIS

Programming: Python, bash, TCL, HTML

Operating Systems: Linux, macOS, Windows

DIVERSITY, EQUITY AND INCLUSION INITIATIVES

Member of UNR Physics Justice, Equity, Diversity and Inclusion Committee (JEDI; 2021-2023)

CONFERENCE PRESENTATIONS AND INVITED TALKS

Invited talk: *Measuring the masses of magnetic white dwarfs with X-rays*: Vasto Accretion Meeting, 18-23 June 2023, Vasto, Italy

Invited talk: *Studies of Accreting Compact Objects*: Physics Colloquium (Job Talk), 27 February 2023, Butler University, Indianapolis, IN, USA

Invited talk: *Studies of Accreting Compact Objects*: Physics and Astronomy Colloquium Series (Job Talk), 23 February 2023, Wayne State University, Detroit, MI, USA

Invited talk: *TBA*: Dept. of Physics and Astronomy Colloquium Series, 17 February 2023, University of Texas Rio Grande Valley, Rio Grande Valley, TX, USA

Invited talk: *Studies of Accretion on to Compact Objects*, 2 February 2023, Lancaster University, Lancaster, UK

Invited talk: *New Results on magnetic cataclysmic variables*: Extreme Astrophysics Group Meeting, 8 December 2022 University of Michigan, Ann Arbor, MI, USA

Invited talk: *New Results on magnetic cataclysmic variables*: Dept. of Physics Colloquium, 29 August 2022, Idaho State University, Pocatello, ID, USA

Invited talk: *Highlights from the NuSTAR Galactic Binaries Working Group*: Ten Years of High-Energy Universe in Focus: NuSTAR 2022, 20-22 Jun 2022, Cagliari, Italy

Invited talk: *New results on magnetic cataclysmic variables*: HEAP seminar series, 9 Sept 2021, University of Utah, Salt Lake City, UT, USA

Invited talk: *New results on magnetic cataclysmic variables*: Michigan State University astro seminar, 7 April 2021 (virtual due to COVID-19)

Invited talk: *Radio and X-ray observations of stellar mass black holes*: COSPAR 2021, 28 January-4 February 2021, Sydney, Australia (virtual due to COVID-19)

Invited talk: *Measuring the masses of white dwarfs with X-rays: A NuSTAR Legacy Survey*: AAVSO 109th annual meeting, 13-15 November 2020, virtual due to COVID-19)

Invited talk: *The Swift Bulge Survey - in search of the faintest X-ray transients*: SRL Seminar, 26 September 2017, Caltech, Pasadena, CA, USA

Contributed talk: *High resolution X-ray spectroscopy of V4641 Sgr during its 2020 outburst*: 241st Meeting of the American Astronomical Society, 8-12 January 2023, Seattle, WA, USA

Contributed talk: *Measuring the masses of magnetic white dwarfs: A NuSTAR Legacy Survey*: 19th HEAD Divisional Meeting, 13-17 March 2022, Pittsburgh, PA, USA

Contributed talk: *Investigating the low-flux states of Intermediate Polars*: 239th meeting of the American Astronomical Society, 9-13 January 2022, Salt Lake City, UT, USA

Contributed talk: *Measuring the masses of Intermediate Polars with NuSTAR: A Legacy Survey*: COSPAR 2021, 28 January-4 February 2021, Sydney, Australia (virtual due to COVID-19)

Contributed Talk: *Studying Magnetic Cataclysmic Variables with GBO*: STARFEST III, 24 October 2020 (virtual due to COVID-19)

Contributed Talk: *Observations of the disk/jet coupling of X-ray binaries during their descent to quiescence: The case for rapid follow-up*: Chandra Frontiers in Time-Domain Science, 7-30 October (virtual due to COVID-19)

Contributed Talk: *Measuring the masses of Intermediate Polars with NuSTAR: A Legacy Survey*: 235th Meeting of the American Astronomical Society, 4-8 January 2020, Honolulu, HI, USA.

Contributed Talk: *Probing the physics of compact objects with the TMT*: TMT Science Forum, 10-12 December 2018, Pasadena, CA, USA.

Contributed talk: *Swift J1753.5-0127 - the black hole that just wouldn't stay quiet*: Time for Accretion, 6-10 August 2018, Sigtuna, Sweden

Contributed talk: *Measuring the masses of Intermediate Polars with NuSTAR*: COSPAR 2018, 14-22 July 2018, Pasadena, CA, USA

Contributed talk: *The radius of the quiescent neutron star in M13*: COSPAR 2018, 14-22 July 2018, Pasadena, CA, USA

Contributed talk: *The Swift Bulge Survey - in search of the faintest X-ray transients*: 16th HEAD Divisional Meeting, 20-24 August 2017, Sun Valley, ID, USA

Contributed talk: *The Swift Bulge Survey - in search of the faintest X-ray transients*: CASCA 2017, 29 May-1 June 2017, University of Alberta, Edmonton, AB, Canada

Contributed talk: *On the orbital period of MAXI J1305-704*: 7 years of MAXI: Monitoring X-ray Transients, 5-7 December 2016, RIKEN, Tokyo, Japan

Contributed talk: No evidence for a low mass black hole in *Swift J1753.5–0127*: New Results in X-ray Astronomy, 28 September 2016, MSSL, Dorking, UK

Contributed talk: *An unusual soft state in Swift J1753.5–0127*: New Results in X-ray Astronomy, 28 October 2015, University of Leicester, Leicester, UK

Contributed talk: *The curious new state of Swift J1753.5–0127*: The Extremes of Black Hole Accretion, 8–10 June 2015, ESAC, Madrid, Spain

Contributed talk: *A 420-day X-ray/optical modulation and extended X-ray dips in the short-period transient Swift J1753.5–0127*: New Results in X-ray Astronomy, 16 September 2013, University of Southampton, Southampton, UK

OBSERVING PROPOSALS

Observing proposal summary:

Accepted observing proposals as PI: 56

Accepted observing proposals as co-I: 83

Funding secured from observing proposals: \$420,842

Selection of accepted observing programmes as PI:

The nature of accretion and outflow in the Intermediate Mass X-ray binary V4641 Sagittarii;
2019–2020; 75ks, Chandra/HETGS

75ks Chandra grating observation of V4641 Sgr, the first grating observation of this system.

Measuring White Dwarf masses with NuSTAR: A Legacy Survey

2017–2020; 985ks; NuSTAR

Legacy survey designed to measure the hard X-ray spectrum of magnetic CVs in order to derive their masses.

Validating JWST's In-orbit Clock Accuracy

2022; 22.9hrs; JWST/NIRCam (Co-PI)

Proposal designed to observe a known timing calibrator in order to calibrate JWST's clock and open up the sub-second time domain to future observers.

Black Hole Jet Launching Physics with MIRI

2022; 6.6hrs, JWST/MIRI (Co-PI)

Proposal to observe two outbursting black hole X-ray binaries with JWST MIRI in low-resolution spectroscopy mode and study the jet spectrum on fast (as low as <1s) timescales.

PUBLICATIONS

Publication record summary:

Refereed publications as first author: 11

Refereed publications as co-author: 34

Non-refereed publications as first author: 12

Non-refereed publications as co-author: 33

Refereed publications as first author:

A. W. Shaw, J. M. Miller, V. Grinberg, D. J. K. Buisson, C. O. Heinke, R. M. Plotkin, J. A. Tomsick, A. Bahramian, P. Gandhi, G. R. Sivakoff: *High resolution X-ray spectroscopy of V4641 Sgr during its 2020 outburst*, 2022, MNRAS, 516, 124

A. W. Shaw, R. M. Plotkin, J. C. A. Miller-Jones, J. Homan, E. Gallo, D. M. Russell, J. A. Tomsick, P. Kaaret, S. Corbel, M. Espinasse, J. Bright: *Observations of the Disk/Jet Coupling of MAXI J1820+070 During its Descent to Quiescence*, 2021, ApJ, 907, 34

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

A. W. Shaw, C. O. Heinke, T. J. Maccarone, G. R. Sivakoff, J. Strader, A. Bahramian, N. Degenaar, J. A. Kennea, E. Kuulkers, A. Rau, R. Wijnands, and J. J. M. in 't Zand, L. E. Rivera Sandoval, L. Shishkovsky, S. J. Swihart, A. J. Tetarenko, R. Wijnands, and J. J. M. in 't Zand: *The Swift Bulge Survey: Optical & near-IR follow-up featuring a likely symbiotic X-ray binary & a focused wind CV*, 2020, MNRAS, 492, 4344 (Erratum in MNRAS, 494, 5081)

A. W. Shaw, B. E. Tetarenko, G. Dubus, T. Dinger, J. A. Tomsick, P. Gandhi, R. M. Plotkin, D. M. Russell: *The Curious Case of Swift J1753.5-0127: A Black Hole Low-mass X-ray Binary Analogue to Z Cam Type Dwarf Novae*, 2019, MNRAS, 482, 1840

A. W. Shaw, C. O. Heinke, A. W. Steiner, S. Campana, H. N. Cohn, W. C. G. Ho, P. M. Lugger, M. Servillat: *The radius of the quiescent neutron star in the globular cluster M13*, 2018, MNRAS, 476, 4713

A. W. Shaw, C. O. Heinke, K. Mukai, G. R. Sivakoff, J. A. Tomsick, V. Rana: *Measuring the masses of Intermediate Polars with NuSTAR: V709 Cas, NY Lup and V1223 Sgr*, 2018, MNRAS, 476, 554

A. W. Shaw, C. O. Heinke, N. Degenaar, R. Wijnands, R. Kaur, L. M. Forestell: *Near-infrared counterparts of three transient very faint neutron star X-ray binaries*, 2017, MNRAS, 471, 2508

A. W. Shaw, P. A. Charles, J. Casares, J. V. Hernández Santisteban: *No evidence for a low-mass black hole in Swift J1753.5–0127*, 2016, MNRAS, 463, 1314

A. W. Shaw, P. Gandhi, D. Altamirano, P. Uttley, J. A. Tomsick, P. A. Charles, F. Fürst, F. Rahoui, D. J. Walton: *A low-luminosity soft state in the short period black hole X-ray binary Swift J1753.5–0127*, 2016, MNRAS, 458, 1636

A. W. Shaw, P. A. Charles, A. J. Bird, R. Cornelisse, J. Casares, F. Lewis, T. Muñoz-Darias, D. M. Russell, C. Zurita: *A 420-day X-ray/optical modulation and extended X-ray dips in the short-period transient Swift J1753.5–0127*, 2013, MNRAS, 433, 74

Refereed publications as co-author:

*** refers to papers led by students that I have supervised**

S. N. Pike, M. Sugizaki, J. van den Eijnden, B. M. Coughenour, A. D. Jaodand, T. Mihara, S. E. Motta, H. Negoro, **A. W. Shaw**, M. Shidatsu, J. A. Tomsick: *Accretion spin-up and a strong magnetic field in the slow-spinning Be X-ray binary MAXI J0655-013*, 2023, accepted for publication in ApJ, **arXiv:2306.16489**

J. A. Tomsick, S. Ganesh Kumar, B.M. Coughenour, **A.W. Shaw**, K. Mukai, J. Hare, M. Clavel, R. Krivonos, F. M. Fornasini, J. Gerber, A. Joens: *Classifying IGR J15038-6021 as a magnetic CV with a massive white dwarf*, 2023, MNRAS, 523, 4520

B. M. Coughenour, J. A. Tomsick, G. Mastroserio, J. F. Steiner, R. M. T. Connors, J. Jiang, J. Hare, **A. W. Shaw**, R. M. Ludlam, A. C. Fabian, J. A. García, J. B. Coley: *Reflection and timing study of the transient black hole X-ray binary MAXI J1803298 with NuSTAR*, 2023, ApJ, 949, 70

*A. R. Tudor, R. M. Plotkin, **A. W. Shaw**, M. Neill: *Photometry+: Development of a Photometric Pipeline for the Great Basin Observatory Robotic Telescope*, 2022, Astronomy and Computing, 40, 100627

- J.- M. Hameury, J.- P. Lasota, **A. W. Shaw**: *Magnetically-gated accretion model: application to short bursts in the intermediate polar V1223 Sgr*, 2022, A&A, 664, 7
- K. L. Hill, C. Littlefield, P. Garnavich, S. Scaringi, P. Szkody, P. A. Mason, M. R. Kennedy, **A. W. Shaw**, and A. E. Covington: *A 28 h Cessation of Accretion in the Intermediate Polar YY Dra (DO Dra)*, 2022, AJ, 163, 246
- *A. E. Covington, **A. W. Shaw**, K. Mukai, C. Littlefield, C. O. Heinke, R.M. Plotkin, D. Barrett, J. Boardman, D. Boyd, S. M. Brincat, R. Carstens, D. F. Collins, L. M. Cook, W. R. Cooney, D. Cejudo Fernández, S. Dufoer, S. Dvorak, C. Galdies, W. Goff, F.-J. Hambsch, S. Johnston, J. Jones, K. Menzies, L. A. G. Monard, E. Morelle, P. Nelson, Y. Ögmen, J. W. Rock, R. Sabo, J. Seargeant, G. Stone, J. Ulowetz, T. Vanmunster: *Investigating the low-flux states in six Intermediate Polars*, 2022, ApJ, 928, 164
- B. M. Coughenour, J. A. Tomsick, **A. W. Shaw**, K. Mukai, M. Clavel, J. Hare, R. Krivonos, F. M. Fornasini: *Classifying IGR J18007–4146 as an intermediate polar using XMM and NuSTAR*, 2022, accepted for publication in MNRAS, arXiv:2201.11170
- H. Lazar, J. A. Tomsick, S. N. Pike, M. Bachetti, D. J. K. Buisson, R. M. T. Connors, A. C. Fabian, F. Fuerst, J. A. García, J. Hare, J. Jiang, **A. W. Shaw**, D. J. Walton: *Spectral and Timing Analysis of NuSTAR and Swift/XRT Observations of the X-Ray Transient MAXI J0637-430*, 2021, ApJ, 921, 155
- J. van den Eijnden, N. Degenaar, T. D. Russell R. Wijnands, A. Bahramian, J. C. A. Miller-Jones, J. V. Hernández Santisteban, E. Gallo, P. Atri, R. M. Plotkin, T. J. Maccarone, G. Sivakoff, J. M. Miller, M. Reynolds, D. M. Russell, D. Maitra, C. O. Heinke, M. Armas Padilla, **A. W. Shaw**: *A new radio census of neutron star X-ray binaries*, 2021, MNRAS, 507, 3899
- M. Stoop, J. van den Eijnden, N. Degenaar, A. Bahramian, S. J. Swihart, J. Strader, F. Jiménez-Ibarra, T. Muñoz-Darias, M. Armas Padilla, **A. W. Shaw**, T. J. Maccarone, R. Wijnands, T. D. Russell, J. V. Hernández Santisteban, J. C. A. Miller-Jones, D. M. Russell, D. Maitra, C. O. Heinke, G. R. Sivakoff, F. Lewis, D. M. Bramich: *Multiwavelength observations reveal a faint candidate black hole X-ray binary in IGR J17285–2922*, 2021, MNRAS, 507, 330
- A. Paduano, A. Bahramian, J. C. A. Miller-Jones, A. Kawka, J. Strader, L. Chomiuk, C. O. Heinke, T. J. Maccarone, C. T. Britt, R. M. Plotkin, **A. W. Shaw**, L. Shishkovsky, E. Tremou, V. Tudor, G. R. Sivakoff: *The MAVERIC Survey: Simultaneous Chandra and VLA observations of the transitional millisecond pulsar candidate NGC 6652B*, 2021, MNRAS, 506, 4107
- E. Masington, T. J. Maccarone, L. Rivera Sandoval, C. O. Heinke, A. Bahramian, **A. W. Shaw**: *An Analysis of X-Ray Hardness Ratios Between Asynchronous and Non-Asynchronous Polars*, 2021, JAAVSO, 49, 2
- J. A. Tomsick, B. M. Coughenour, J. Hare, R. Krivonos, A. Bodaghee, S. Chaty, M. Clavel, F. M. Fornasini, J. Rodriguez, **A. W. Shaw**: *Using Chandra Localizations and Gaia Distances and Proper Motions to Classify Hard X-ray Sources Discovered by INTEGRAL*, 2021, ApJ, 914, 48
- R. M. Plotkin, A. Bahramian, J. C. A. Miller-Jones, M. T. Reynolds, P. Atri, T. J. Maccarone, **A. W. Shaw**, P. Gandhi: *Toward a Larger Sample of Radio Jets from Quiescent Black Hole X-ray Binaries*, 2021, MNRAS, 503, 3784
- R. M. Ludlam, A. D. Jaodand, J. A. García, N. Degenaar, J. A. Tomsick, E. M. Cackett, A. C. Fabian, P. Gandhi, D. J. K. Buisson, **A. W. Shaw**, D. Chakrabarty: *Simultaneous NICER and NuSTAR Observations of the Ultra-compact X-ray Binary 4U 1543-624*, 2021, ApJ, 911, 123

- B. E. Tetarenko, **A. W. Shaw**, E. R. Manrow, P. A. Charles, T. D. Russell, A. J. Tetarenko: *Using Optical Spectroscopy to Map the Geometry and Structure of the Irradiated Accretion Discs in Low-mass X-ray Binaries: The Pilot-Study of MAXI J0637-430*, 2021, MNRAS, 501, 3406
- A. Bahramian, C. O. Heinke, J. A. Kennea, T. J. Maccarone, P. A. Evans, R. Wijnands, N. Degenaar, J. J. M. in 't Zand, **A. W. Shaw**, L. E. Rivera Sandoval, S. McClure, A. J. Tetarenko, J. Strader, E. Kuulkers, G. R. Sivakoff: *The Swift Bulge Survey: Motivation, strategy, and first X-ray results*, 2021, MNRAS, 501, 2790
- D. J. K. Buisson, A. C. Fabian, P. Gandhi, E. Kara, M. L. Parker, **A. W. Shaw**, J. A. Tomsick, D. J. Walton, J. Wang: *MAXI J1820+070 with NuSTAR II. Flaring during the hard to soft state transition with a long soft lag*, 2020, MNRAS, 500, 3976
- J. van den Eijnden, N. Degenaar, T. D. Russell, D. J. K. Buisson, D. Altamirano, M. Armas Padilla, A. Bahramian, N. Castro Segura, F. A. Fogantini, C. O. Heinke, T. Maccarone, D. Maitra, J. C. A. Miller-Jones, T. Muñoz-Darias, M. Özbey Arabaci, D. M. Russell, **A. W. Shaw**, G. Sivakoff, A. J. Tetarenko, F. Vincentelli, R. Wijnands: *The variable radio counterpart of Swift J1858.6-0814*, 2020, MNRAS, 496, 4127
- C. O. Heinke, M. G. Ivanov, L. Chomiuk, H. N. Cohn, S. Crothers, T. de Boer, N. Ivanova, E. W. Koch, A. K. H. Kong, N. Leigh, P. M. Lugger, L. Nelson, C. J. Parr, E. W. Rosolowsky, A. J. Ruiter, C. L. Sarazin, **A. W. Shaw**, G. R. Sivakoff, M. van den Berg: *The X-ray Emissivity of Low-Density Stellar Populations*, 2020, MNRAS, 492, 5684
- D. J. K. Buisson, A. C. Fabian, D. Barret, F. Fürst, P. Gandhi, J. A. García, E. Kara, K. K. Madsen, J. M. Miller, M. L. Parker, **A. W. Shaw**, J. A. Tomsick, D. J. Walton: *MAXI J1820+070 with NuSTAR I. An increase in variability frequency but a stable reflection spectrum: coronal properties and implications for the inner disc in black hole binaries*, 2019, MNRAS, 490, 1350
- Y. Zhao, C. O. Heinke, S. S. Tsygankov, **A. W. Shaw**: *Soft excess in the quiescent Be/X-ray pulsar RX J0812.4-3114*, 2019, MNRAS, 488, 4427
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