

Dr. Abigail L. Stevens

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Current Position

NSF Astronomy & Astrophysics Postdoctoral Fellow, Michigan State U. and U. Michigan MI, USA
Sponsoring scientists: J. Strader (MSU) and J.M. Miller (UMich) 2018–present

Education

Ph.D. in Astronomy, Universiteit van Amsterdam (Advisor: P. Uttley) Amsterdam, Netherlands, 2013 – 2018
M.Sc. in Physics, University of Alberta (Advisor: S.M. Morsink) Edmonton, AB, Canada, 2011 – 2013
B.A. in Science, Bard College (Advisor: P. Skiff) Annandale-on-Hudson, NY, USA, 2007 – 2011

Honors & Awards

NSF Astronomy & Astrophysics Postdoctoral Fellowship, Michigan State U. and U. Michigan 2018 – present
Accepted Lorentz Center proposal co-author, Python in Astronomy 2017 workshop 2016
Travel grants (5), LKBF (Leids Kerkhoven-Bosscha Fonds) 2015, 2016, 2017
Best Student Talk, Canadian Astronomical Society Graduate Student Committee 2013
Travel grants (2), U. Alberta 2012, 2013

Collaboration Memberships

NICER (NASA Explorer mission), Observatory Science working group, Bursts & Accretion working group 2018 – present
eXTP (proposed Chinese Acad. Sci. mission), Accretion in strong gravity working group 2018 – present
STROBE-X (proposed NASA Probe in concept study), Stellar-mass compact objects working group 2016 – present

Presentations

INVITED TALKS AND SEMINARS

McGill Space Institute astrophysics seminar Montreal, QC, Canada, 2018
Wayne State U. Undergraduate Research Fair keynote Detroit, MI, USA, 2018
Monitoring the Non-Thermal Universe 2018 Cochem, Germany, 2018
U. Tübingen Astronomy group seminar Tübingen, Germany, 2018
AAS 16th Higher Energy Astrophysics Division meeting Sun Valley, ID, USA, 2017
Czech Academy of Sciences Relativistic Astrophysics seminar Prague, Czech Republic, 2017
Erlangen Center for Astroparticle Physics seminar Erlangen, Germany, 2017
Joint Institute for Nuclear Astrophysics lunch seminar East Lansing, MI, USA, 2017
MPE High-energy astrophysics group seminar Garching, Germany, 2017
MIT X-ray group seminar Cambridge, MA, USA, 2017
Harvard/CfA Guest seminar Cambridge, MA, USA, 2017
KITP program on accretion disks seminar Santa Barbara, CA, USA, 2017
U. Alberta Astrophysics group seminar Edmonton, AB, Canada, 2016
NASA Goddard X-ray astrophysics group seminar Greenbelt, MD, USA, 2015
Naval Research Laboratory Astrophysics group seminar Washington, DC, USA, 2015
U. Maryland Department of Astronomy seminar College Park, MD, USA, 2015

CONTRIBUTED TALKS

Breaking the Limits II: Super-Eddington Accretion (2 talks)	Castiadas, Italy, 2018
43rd COSPAR Scientific Assembly (3 talks)	Pasadena, CA, USA, 2018
AAS 16th Higher Energy Astrophysics Division meeting	Sun Valley, ID, USA, 2017
High-throughput X-ray astronomy in the eXTP era	Rome, Italy, 2017
AAS 229 (Dissertation talk)	Grapevine, TX, USA, 2017
71st Netherlands Astronomy Conference	Nunspeet, Netherlands, 2016
AAS 15th High Energy Astrophysics Division meeting	Naples, FL, USA, 2016
Python in Astronomy 2016	Seattle, WA, USA, 2016
The X-ray Spectral Timing Revolution workshop	Leiden, Netherlands, 2016
European Week of Astronomy and Space Science 2015	Santa Cruz de Tenerife, Spain, 2015
XMM-Newton Workshop: The Extremes of Black Hole Accretion	Madrid, Spain, 2015
Canadian Astronomical Society 2013	Vancouver, BC, Canada, 2013

Academic Service

Steering committee [STROBE-X](#) (proposed NASA Probe in concept study)

Referee Monthly Notices of the Royal Astronomical Society, SciPy Conference

Scientific organizing committee [The Future of X-ray Timing](#), [Python in Astronomy 2019](#), [Python in Astronomy 2017](#)

Co-organizer EWASS 2017 session on research software and hack day, AAS 229 Hack Together Day

Research Experience

Michigan State University, Postdoctoral research associate East Lansing, MI, 2018
Worked on spectral-timing analysis of X-ray binaries in *NICER* data (Advisor: J. Strader)

Teaching Experience

Google Summer of Code, Mentor East Lansing, MI, 2018
Stingray Software library development under the [Open Astronomy organization](#)

Anton Pannekoek Institute, U. Amsterdam, Teaching Assistant Amsterdam, 2013 – 2015
Open Problems in Modern Astrophysics (MSc level), Observatory practicum (BSc level)

Department of Physics, U. Alberta, Teaching Assistant Edmonton, AB, 2011 – 2013
Observatory (3rd & 6th grade, and general public), Intro physics lab, High school physics experiments

Johns Hopkins Center for Talented Youth, Teaching Assistant Palo Alto, CA, 2011
Science and Engineering (5th & 6th grade)

Leadership Roles

Anton Pannekoek Institute PhD and PD Council, Founding member and chairperson Amsterdam, 2015 – 2016

Nerd Nite Amsterdam, Boss, communications and public relations Amsterdam, 2014 – 2016

Journal club, Organizer Amsterdam, 2014 – 2015

“Timing Club” X-ray group meeting, Founder and organizer Amsterdam, 2014 – 2015

Canadian Astronomical Society Graduate Student Committee, U. Alberta representative Edmonton, AB, 2013

Assiniboia Community Housing Co-operative, House representative and house treasurer Edmonton, AB, 2012 – 2013

U. Alberta Graduate Physics Student Association, Astrophysics representative Edmonton, AB, 2012 – 2013

Science Outreach

I am committed to science outreach for a variety of audiences and have pursued opportunities to connect with communities in upstate New York, Edmonton, Amsterdam, and mid-Michigan. I have also presented on [mental wellbeing for early career researchers](#). **Highlights include:** [presenter at Astronomy on Tap Lansing](#), [invited speaker at Science-Art Slam](#), [guest writer on AstroBetter](#), [speaker at Nerd Nite Edmonton](#), and activity leader at science events for grades K-8.

Skills

COMPUTING

- GitHub projects and contributions: github.com/abigailStev
- Advanced level: Python, Jupyter/iPython notebooks
- Intermediate level: bash scripts, git version control
- Beginner level: C, C++, Fortran, HTML

X-RAY DATA ANALYSIS

- Co-developer and coordinator of [Stingray](#), an X-ray spectral-timing library in Python
- XSPEC spectral fitting, including simultaneous fitting of 80+ spectra
- Developing and using bespoke spectral models like [SIMPLER](#) and [DISKFBB](#)

COMMUNICATION

- Languages: English (native fluency), Dutch (CEFR A2; ILR 1; elementary proficiency)
- Social media manager for Nerd Nite Amsterdam; nearly doubled the number of Facebook followers to 900+ in 2015-2016
- Twitter co-manager for the 71st Netherlands Astronomy Conference in 2016; our conference hashtag was 'trending' in the Netherlands for the first day of the conference
- Social media manager for *STROBE-X*; 700+ Facebook followers

Research Interests

Topics: X-ray binaries, compact objects, transients, time-domain astronomy, accretion, quasi-periodic oscillations (QPOs), X-ray burst oscillations, general relativity

Techniques: X-ray time series analysis, spectral-timing, signal processing with Fourier techniques, optimization algorithms

Publications

[ADS publication link](#) | ORCID: [0000-0002-5041-3079](https://orcid.org/0000-0002-5041-3079)

REFEREED

6. E. Kara, J.F. Steiner, A.C. Fabian, et al. (13 co-authors including **A.L. Stevens**) 2019. *The corona contracts in a new black hole transient*, Nature, in press
5. A. De Rosa, P. Uttley, L. Gou, et al. (101 co-authors including **A.L. Stevens**) 2019. *Accretion in Strong Field Gravity with eXTP*, Sci. China-Phys. Mech. Astron., 62, 029504, 22pp.
4. **A.L. Stevens**, P. Uttley, D. Altamirano, et al. 2018. *A NICER Discovery of a Low-Frequency Quasi-Periodic Oscillation in the Soft-Intermediate State of MAXI J1535–571*, ApJL, 865, L15, 7pp.
3. **A.L. Stevens**, J.D. Fiege., D.A. Leahy, and S.M. Morsink 2016. *Neutron Star Mass-Radius Constraints using Evolutionary Optimization*, ApJ, 833,244, 13pp.
2. **A.L. Stevens** and P. Uttley 2016. *Phase-Resolved Spectroscopy of Type B QPOs in GX 339–4*, MNRAS, 460, 2796, 14pp.
1. K.G. Elshamouty, C.O. Heinke, S.M. Morsink, S. Bogdanov, and **A.L. Stevens** 2016. *The Impact of Surface Temperature Inhomogeneities on Quiescent Neutron Star Radius Measurements*, ApJ, 826, 162, 13pp.

UNREFEREED

13. J. Homan, **A.L. Stevens**, D. Altamirano, et al. 2018. *MAXI J1820+070 continuing its rapid evolution toward the hard state*, ATel, 12068

12. P.S. Ray et al. (33 co-authors including **A.L. Stevens**) 2018. *STROBE-X: A Probe-Class Mission for X-ray Spectroscopy and Timing on Timescales from Microseconds to Years*, Proc. SPIE, 10699, 1069919
11. J. Homan et al. (11 co-authors including **A.L. Stevens**) 2018. *Continuing NICER Observations of the State Transition in ASASSN-18ey/MAXI J1820+070*, ATel, 11823
10. M.F. Corcoran et al. (7 co-authors including **A.L. Stevens**) 2018. *NICER X-ray Observations of Cyg X-3 During the Recent Gamma-Ray Bright State*, ATel, 11821
9. J. Homan et al. (10 co-authors including **A.L. Stevens**) 2018. *A Rapid State Transition in MAXI J1820+070*, ATel, 11820
8. J. Neilsen, **A.L. Stevens**, J.F. Steiner, et al. 2018. *NICER Observation of Strong Wind Absorption in the Soft Outburst of 4U 1630–47*, ATel, 11771
7. R.M. Ludlam et al. (17 co-authors including **A.L. Stevens**) 2018. *NICER Detection of the New X-ray Transient MAXI J1727–203*, ATel, 11689
6. **A.L. Stevens** 2018. *New Techniques for Understanding X-ray Variability from Compact Objects* (Doctoral thesis), U. Amsterdam Digital Academic Repository ([11245.1/2d439f87-5fe6-439f-bea4-ce20a421ef4a](https://doi.org/10.11245.1/2d439f87-5fe6-439f-bea4-ce20a421ef4a))
5. D. Muna et al. (153 co-authors including **A.L. Stevens**) 2016. *The Astropy Problem*, [arXiv:1610.03159](https://arxiv.org/abs/1610.03159)
4. D. Huppenkothen, M. Bachetti, **A.L. Stevens**, S. Migliari, and P. Balm 2016. *Stingray: Spectral-timing software*, Astrophysics Source Code Library, [ascl:1608.001](https://ascl.net/1608.001)
3. M. Feroci, et al. (464 co-authors including **A.L. Stevens**) 2016. *The LOFT Mission Concept: A Status Update*, Proc. SPIE, 9905, 99051R
2. **A.L. Stevens** 2013. *Understanding Parameter Degeneracies in Neutron Star X-ray Light Curves* (Masters thesis), U. Alberta Library Education & Research Archive ([neos.6504112](https://neous.library.ualberta.ca/record/6504112))
1. **A.L. Stevens** 2011. *A Mathematical Exploration of Low-Dimensional Black Holes* (Bachelors thesis), Bard Digital Commons, Senior Projects Spring 2011 ([Paper no. 28](#))