

Kavitha Arur

Curriculum Vitae

NASA Goddard Space Flight Center
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Employment

- 2022 - Present **Postdoctoral Research Associate, IXPE GOF Lead, NASA Goddard/ UMBC, USA.**
- 2020 - 2022 **CRA Postdoctoral Fellow, Georgia Institute of Technology, USA.**
- Summer 2020 **Postdoctoral Researcher, Texas Tech University, USA.**
- 2016 - 2020 **Research Assistant, Texas Tech University.**
- 2014 - 2016 **Teaching Assistant, Texas Tech University.**

Education

- 2015 - 2020 **Ph.D in Physics, Texas Tech University, USA,**
Topic: Fast variability of accretion flow around black holes.
- 2014 - 2015 **M.Sc in Physics, Texas Tech University, USA, .**
- 2009 - 2013 **M.Phys Physics and Astronomy, University of Southampton, UK, .**
Master's Thesis: A study of LMXBs using RXTE/INTEGRAL
Bachelor's Dissertation: Thermonuclear bursts from Neutron Stars
- 2011 **Summer Undergraduate Research, University of Southampton, UK, .**
Topic: Investigating coronal quenching during outbursts in LMXBs.

Honours & Awards

- 2020 Outstanding PhD Student Award
- 2019 TTU Graduate School Travel Grant
- 2019 Bucy Graduate Scholarship in Applied Physics
- 2017 TTU Departmental Poster Competition, 3rd Place
- 2017 David Howe Graduate Fellowship in Physics
- 2009 - 2013 School of Physics and Astronomy International Scholarship

Accepted Proposals

- 2019 PI, NICER Cycle 2 "Understanding hysteresis in black hole state transitions using higher order statistics" (Awarded \$20,000)

Undergraduate Research Mentoring

- 2021 - Present Divyesh Ved. Project on timing analysis of neutron star X-ray binaries. Winner of President's Undergraduate Research Awards (Fall 2022)
- 2021 Erin Horbacz. Project on timing analysis of neutron star X-ray binaries.

Publications

Refereed

- **Arur.K.** and Maccarone.T. J., 2022, 'Using the bispectrum to probe radio X-ray correlations in GRS 1915+105', *MNRAS*, 514, 1720
- Gandhi. P, Rao. A., Charles. P. A., Belczynski. K., Maccarone. T. J., **Arur. K.**, Corral-Santana. J. M, 2020, "A period dependent spatial scatter of Galactic Black Hole Transients", *MNRAS*, 496, 22
- **Arur.K.** and Maccarone.T. J., 2020 "Inclination Dependence in the Non-linear Variability of Quasi Periodic Oscillations from Black Hole Binaries", *MNRAS*, 491, 313
- **Arur.K.** and Maccarone.T. J., 2019 "Non linear Variability of Quasi-Periodic Oscillations in GX 339-4", *MNRAS*, 486,3431
- **Arur.K.** and Maccarone.T. J., 2018 "Selection Effects on the Orbital Period Distribution of Low Mass Black Hole X-ray Binaries",*MNRAS*, 474,69
- P.H.Sell, **Arur.K.**, T.J.Maccarone, R.Kotak, C.Knigge, D.J.Sand & S. Valenti, 2018, "Chandra X-ray Constraints on the Candidate Ca-rich Gap Transient SN 2016hnk", *MNRAS*, 475,111

Unrefereed

- T.J.Maccarone and **Arur.K.**, 2019, "On the mass of the white dwarf in BZ UMa", *RNAAS*, 3, 185
- P.S Ray et al. (33 authors incl. **Arur.K.**), 2018, STROBE-X: A Probe-Class Mission for X-ray Spectroscopy and Timing on Timescales from Microseconds to Years, *Proc. SPIE*, 10699, 1069919

Invited Talks & Seminars

- 2022 University of Rhode Island; Colloquium
- 2022 Howard University; Colloquium
- 2022 University of Maryland ; CTC seminar
- 2021 University of Florida ; Astronomy seminar
- 2020 Georgia Institute of Technology ; CRA seminar
- 2020 Michigan State University ; Astronomy Seminar
- 2019 University of Oxford ; Research Group Seminar
- 2018 University of Arizona ; Research Group Seminar
- 2018 University of Southampton ; Seminar
- 2018 IUCAA, Pune ; Seminar
- 2017 Institute of Mathematical Science, Chennai ; Seminar
- 2017 Texas Tech University; Graduate Research Talk
- 2017 Arecibo Observatory; Colloquium

Leadership

- 2023 AAS 241 Workshop "How to give great presentations: A scientists guide to effective communication", *Co-Lead and Organizer*
- 2022 AAS 240 Workshop "How to give great presentations: A scientists guide to effective communication", *Co-Lead and Organizer*

- 2021–2022 Georgia Tech College of Sciences Research Faculty Advisory Council
- 2020–Present AAS Committee on Employment
- 2020–2022 Cosmic Coffee (weekly journal club), *Organizer*
- 2019 TTU Departmental Poster Competition, *Lead Organizer*
- 2019–2020 Sigma Pi Sigma, *President, TTU Chapter*
- 2018–2019 Sigma Pi Sigma, *Secretary, TTU Chapter*
- 2017 STROBE-X Science Definition Workshop, *Local Organizer*
- 2016 Stellar Remnants at the Junction, *Local Organizer*

Professional Service

- Session Chair: AAS 241, Session 428
- Social Media Coordinator: STROBE-X
- Review Panel: NICER GO Program
- Review Panel: Swift GO Program
- Review Panel: NASA Astrophysics Data Analysis Program
- Review Panel: NASA Astrophysics Theory Program
- Science Working Group: STROBE-X
- Session Chair: AAS 238, Session 314
- Chambliss competition judge, AAS 238

Conferences

- 2023 20th AAS HEAD Meeting. *Poster: 'Understanding rapid X-ray variability from black hole binaries using the bispectrum'*
- 2023 20th AAS HEAD Meeting. *Poster: 'The Imaging X-ray Polarimetry Explorer General Observer Program'*
- 2023 241st AAS Meeting. *Poster: 'Understanding the non-linearity of Quasi-Periodic Oscillations through dynamical transitions'*
- 2022 44th COSPAR, Athens, Greece. *Talk: 'Probing Quasi-Periodic Oscillations using the Bispectrum'*
- 2022 240th AAS Meeting. *Talk: 'Understanding the non-linearity of Quasi-Periodic Oscillations through dynamical transitions'*
- 2022 19th AAS HEAD Meeting. *Poster: 'Understanding the non-linearity of Quasi-Periodic Oscillations through dynamical transitions'*
- 2021 The 9th Microquasar Workshop: Celebrating over 50 years of discovery. *Talk: 'Probing the phase coupling between the QPO and broadband noise in GRS 1915+105'*
- 2021 HEAD Frontier Seminar Series (July 2021) *Talk: 'Probing the phase coupling between the QPO and broadband noise in GRS 1915+105'*
- 2021 238th AAS Meeting. *iPoster: 'Probing the phase coupling between the QPO and broadband noise in GRS 1915+105'*
- 2020 235th AAS Meeting, Honolulu, HI. *Dissertation Talk: 'Using the Bispectrum to Understand Variability from Black Hole X-ray Binaries'*
- 2019 Future of X-ray Timing, Amsterdam. *Talk: 'Inclination dependence of the non linear variability of QPOs.'*

- 2019 16th AAS HEAD Meeting. *Poster: 'Inclination dependence of the non linear variability of QPOs.'*
- 2018 34th Annual New Mexico Symposium. *Poster: 'Bicoherence of QPOs from GX 339-4'*
- 2018 42nd COSPAR, Pasadena California. *Talk: 'Bicoherence of QPOs from GX 339-4'*
- 2017 229th AAS Meeting, Grapevine, TX. *Poster: 'Selection effects on the orbital period distribution of LMXBs.'*
- 2012 New Results in X-ray Astronomy 2011. *Poster: 'Coronal Quenching of Aql X-1'*

Computer skills

- OS MacOS, Linux, Windows
- Programming Python(Intermediate), C++(Beginner), PostgreSQL(Beginner)
- Other Jupyter
- Scientific XSPEC, DS9
- Typography L^AT_EX, Microsoft Office

Teaching Experience (Lab)

- PHYS 3101: Legacy Modern Physics
- ASTR 1400: Solar System Astronomy
- PHYS 1408: Physics I (Calculus based)
- PHYS 1403: Physics I (Algebra based)

Volunteer Service

- 2015 – 2020 **South Plains Regional Fair, Judge.**
- 2015 – 2018 **Mentor Tech, Mentor.**
Mentor for incoming freshman to help them achieve their personal and professional goals.
- 2015 – 2018 **Mentor Tech, Physics Tutor.**
Volunteer physics tutor for monthly study sessions open to all Mentor Tech participants.

Professional Societies

- Sigma Pi Sigma, Physics National Honor Society
- American Astronomical Society

Outreach Highlights

Georgia Institute of Technology

- 2021 **JWST community event.**
Virtual event for the Georgia College Science Education Center
- 2021 **JWST community event.**
Virtual event for the Atlanta Fulton County Library

Texas Tech University

- 2019 **Astro Night.**
Helped organize and led various hands on demonstrations at a monthly astronomy outreach event for the public at TTU
- 2019 **Public Astronomy Outreach.**
Event for public viewing of the total lunar eclipse on campus

- 2018 **Science Made Simple.**
Hands-on science demonstrations for the public at the TTU Museum.
- 2017 **AAUW Tech Savvy Day.**
Lead presenter of demonstration on optics and cameras to encourage girls in middle school to pursue careers in STEM.
- 2016 **AAUW Tech Savvy Day.**
Co-presented demonstration on water rockets to encourage girls in middle school to pursue careers in STEM.
- 2015 **TTU Physics Circus.**
Demonstrated various hands-on physics activities.
- [University of Southampton](#)
- 2012 **SUSF Physoc Outreach Launch I,** Part of the founding committee of the Southampton University Space Flight Society.
Helped organize balloon launch carrying science experiments with students from a local school and was in charge of coordinating and updating social media.

Languages

English and Tamil (Both native)

Certifications

Data Scientist Professional (Data Camp)

Project Management Consortium (Cheeky Scientist)