

AKSHARA Viswanathan | she/her

Observational astronomer in the field of Galactic Archaeology

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Education

Program	Affiliation	Grades	Year
<i>Ph.D.</i> (Astronomy) A new view of the old Milky Way with Else Starkenburg & Amina Helmi	Kapteyn Astronomical Institute <i>University of Groningen, The Netherlands</i>	-	2020-Present
<i>M.Sc.</i> (Astrophysics) Effects of gravitational lens models on merging Binary Black Hole systems with Chris Messenger & Martin Hendry	School of Physics and Astronomy <i>University of Glasgow, United Kingdom</i>	Distinction 20.0/22	2019-20
<i>B.E.</i> (Electronics & Commn. Engg.) Tri-band wearable antenna for off-body communication with Malathi Kanagasabai	College of Engineering Guindy <i>Anna University, India</i>	Distinction 9.21/10	2015-19
<i>Secondary School</i> (Science Major)	DAV School <i>Chennai, India</i>	1183/1200 98.6%	2013-15

Academic honours and fellowships

- *Mitacs Globalink Summer Research Fellowship (7000CAD)* at University of Victoria, Canada. (2018).
- *IASc-NASI-INSa Summer Research Fellowship (25000INR)* at Institute for Plasma Research, India (2017).
- *Best Paper Award* at National Conference on Information and Communication Technologies (2019).
- *Best Club Award* by Anna University for founding and leading Astro Club of CEG (2019).
- *Short-listed for PLANCKS UK 2020* national physics competition held in Edinburgh, UK (2020).
- *State Award* for Computer Science and Mathematics in HSC by Tamil Nadu Government (2015).
- *Central Award* for 10 CGPA in SSLC by Indian Government (2013).

Publications and conference contribution record

- *4 primary author (first/second author) publications* (two refereed, two proceeding) with 80+ citations, h-index 1.
 - *6 co-authored publications* with 20+ citations, h-index 3.
 - *1 invited talk, 8 contributed talks, 4 contributed posters* and several participation at international conferences.
 - *1 invited workshop and 2 invited talks* at international universities.
- (See the list of publications and conference contributions in the end)

Successful observing proposals

- *PI of an ongoing program (23A, 22B) at the Isaac Newton Telescope Intermediate Dispersion Spectrograph (INT/IDS), La Palma* with 27 nights to follow-up extremely metal poor stars from Pristine and Gaia synthetic CaHK surveys. 23B proposal yet to be submitted.
- *Significantly contributing co-I of a program (22A, 21B) at the Isaac Newton Telescope Intermediate Dispersion Spectrograph (INT/IDS), La Palma* with 28 nights to follow-up stream member candidates from STREAMFINDER collaboration.
- *9 nights of observing experience* with INT/IDS, La Palma for the follow-up of Pristine EMPs and STREAMFINDER streams.

Other projects

- Analysing EIS Data from Hinode at University of Glasgow (2020)
- Statistical Data Analysis using MCMC at University of Glasgow (2020)
- High Current, High Frequency Pulsar for the Excitation of Whistler Waves in Laboratory Plasma at Institute for Plasma Research, Gandhinagar (2017)
- Robotics project on Solar Smart Homes at Anna University (Awarded fourth place by the Robotics Club during the

- display of the same) (2017)
- o Microcontroller based Remote Control for Home Appliances Project at Anna University
- o Research Survey on Supermassive Black Hole Growth in Dual and Offset AGNs and detection of Gravitational Waves between SMBH in late stages of galaxy mergers at University of Glasgow (2019)

Teaching and supervision

- o *Co-supervision of Anne Foppen* with Else Starkenburg on a bachelor thesis titled The metallicity structure of the outer Galactic halo (ongoing).
- o *Co-supervision of Anna Esselink* with Else Starkenburg on a bachelor thesis titled Investigating stellar streams in the retrograde Milky Way halo (2022) and summer project on deriving photometric metallicities from Pristine CaHK bands (2021).
- o *Teaching Assistant* of Cosmology (2021) and Physics of Galaxies (2022).

Collaborations

- o *Active member* of the Pristine survey collaboration (2020-Present).
- o *Active member* of the Galactica research group (2020-Present).
- o *Active member* of the STREAMFINDER collaboration (2022-Present).
- o *Early career scientist* of The Early Milky Way ISSI (International Space Science Institute) Team (2022).
- o *Member* of the WEAVE collaboration (2022-Present).
- o *Member* of the European Astronomical Society (EAS) (2021-Present).
- o *Member* of the Royal Netherlands Astronomical Society (NAC) (2021-Present).
- o *Member* of the Netherlands Research School for Astronomy (NOVA) Network 1 (2020-Present).

Responsibilities held

- o *PhD representative* of Kapteyn Institute Equity, Diversity and Inclusivity committee (2022-present).
- o *Head* of Wednesday Lunch Talk committee at Kapteyn Institute, Groningen (2021-22).
- o *Secretary* of Young Minds Groningen Chapter, European Physical Society (2021-Present).
- o *Writer* for European Physical Society's newsletter 53/3 (2022-Present).
- o *MSc Student Representative* at School of Physics and Astronomy, University of Glasgow (2019-20).
- o *Founder and President* of Astronomy and Planetary Sciences Club of Anna University (2018-19).
- o *3 years of social service* with the National Service Scheme, India (2015-18).
- o *Vice President* of Electronics and Communication Engineering Association-ECEA (2016-19).
- o *Student Representative* of the department of Electronics and Communication Engineering (2017-18).
- o *Director of Interviews* of The Guindy Times, Official Campus Magazine of CEG, ACT SAP (2015-19).
- o *Event Organizer, Content Writer and Designer* of Kurukshetra with UNESCO Patronage (2015-18).
- o *Mentor and Club Administrator* at the Robotics Club of CEG (2016-18).
- o *Member* of Astrosoc Club at University of Glasgow (2019-20).
- o *Outreach and EDI events organized:*
 - Seminar for International day of Women and Girls in Science (2022)
 - Hands-On Telescope workshop (2019)
 - Zero Shadow Day event (2019)
 - Astro Coffee-TED Talks (2019)
 - Model Rocketry & Star Gazing at Yelagiri (2019)
 - College carousal at Blaauw Observatory (2022)
 - Industrial visit to ISRO (2017)
 - Traffic Awareness program (2016)
 - Public speaking on STEM-related topics
 - Technical event: How stuff works
 - Non-technical events: Word wars, Alcatraz, Harry Potter, Sherlock Holmes, Game of Thrones.

Technical skills

- o Programming Language: Python(main), C++, MATLAB
- o Experienced TOPCAT user
- o Data reduction: IRAF
- o Big data analysis: using vaex

Industry experience

- o Student IT Helpdesk Assistant, Technical & Specialist at University of Glasgow (2019-20)
- o Abacus Tutor & Digital marketing admin at Super Maths & English, British Youth IT College
- o Campus Ambassador/Collaborator of SPACE India (2020)
- o Outreach Event Organizer at Space Kidz India (2019)

- Content and Research Internee at ProtoValley - a 3D Printing Company (2016)
- Website Content Writer at Lunar Mission One, Indian Chapter (2016)
- Ground Control Team at the GU Orbit – Microsatellites Building Group (2019)

Non-academic honours

- Silver Medal for singing in patriotic music by Bharat Vikas Parishad (2013)
- Bronze Medal in Chess by Universal Sports Club (2013)
- Second prize in National Level Essay Writing by Kavya Kala Vaibhav (2013)

Others

- Hobbies: Climbing, Yoga, Gardening, Music, Cooking
- Languages: English, Tamil, Hindi, Dutch (elementary).

Conferences and workshops list

Invited participation.....

4. Hidden deep in the halo: Investigating retrograde streams with a reduced proper motion selected halo catalogue: Lorentz Center workshop on Towards Real-Time Galactic Dynamics, Leiden, NL (2022)
3. Streams22 workshop: Community Atlas of Tidal Streams, virtual, USA (2022)
2. Prospects in Astronomy for Engineers: Anna University, India (2020)
1. Seminar on Galaxies at the SPACE program by PAGSA, University of Victoria (2018)

Contributed participation.....

12. (upcoming talk) Hidden deep in the halo: Selection of a reduced proper motion halo catalogue and mining retrograde streams in the velocity space: Wednesday Lunch Talk, Groningen, NL
 11. (upcoming talk) Detection of density variations and off-track features in stellar streams: IAUS379: Dynamical Masses of Local Group Galaxies, Potsdam, Germany
 10. (poster) Observational Diagnostics of the Old Milky Way using the most metal-poor stars: IAUS377: Early disk galaxy formation: from JWST to the Milky Way, Kuala Lumpur, Malaysia
 9. (poster) Galactic archaeology with the metal-poor Galaxy: NOVA review meeting, Groningen, NL
 8. (talk) Hidden deep in the halo: A distinct chemo-dynamical perspective of retrograde tidal streams in the Milky Way: EAS 2022, Valencia, Spain
 7. (poster) A new view of the old Milky Way: Fifty million local halo sources using Gaia eDR3 proper motion and photometry: EAS 2022, Valencia, Spain
 6. (talk) A unique view of the metallicity structure of the Milky Way halo: EAS 2021, virtual, NL
 5. (talk) A unique view of the metallicity structure of the Milky Way halo: GALAH Scienc Meeting 2021, virtual, AUS
 4. (talk) A unique view of the metallicity structure of the Milky Way halo: NAC 2021, virtual, NL
 3. (talk) AGN-Merger Connection: Texas symposium 2019, Portsmouth, UK
 2. (poster) Quantification of the merger fraction in local AGN hosts: ASI 2019, Bangalore, India
 1. (poster) Low Profile Modified Loop Antenna for WBAN Applications: National Conference on Information and Communication Technologies 2019, Chennai, India
- (Participated without contributions in several other conferences, meetings, collaboration telecons and Kapteyn colloquiums & lunch talks)

Other workshops.....

5. Astro Spectroscopy Workshop using RSpec Software at Shastra, IIT Madras (2017)
4. Samsung's Virtual Reality Workshop at Kurukshetra, National Technical Fest (2016)
3. 4-Day visit to Dominion Astrophysical Observatory – NRC Herzberg (2018)
2. Image Processing Training certified by IEEE (2017)
1. Star gazing and Observation nights at Acre Road Observatory, Glasgow (2019)

Publications list

Primary author.....

3. **Viswanathan, A.**, Starkenburg, E., Koppelman, H.H., Helmi, A., Balbinot, E., Esselink, A.F., 2022. Hidden deep in the halo: Selection of a reduced proper motion halo catalogue and mining retrograde streams in the velocity space. Monthly Notices of the Royal Astronomical Society, accepted.
2. Ellison, S.L., **Viswanathan, A.**, Patton, D.R., Bottrell, C., McConnachie, A.W., Gwyn, S. and Cuillandre, J.C., 2019. A definitive merger-AGN connection at $z \sim 0$ with CFIS: mergers have an excess of AGN and AGN hosts are more

frequently disturbed. Monthly Notices of the Royal Astronomical Society, 487(2), pp.2491-2504.

1. Dinesh, N.M., **Viswanathan, A.**, Morais, M.S., Kanagasabai, G.N.A., Rajesh,N., "Low Profile Modified Loop Antenna for WBAN Applications," Proceedings of the 5th National Conference on Information and Communication Technologies, SSN College of Engineering, Apr. 1 & 2, pp.102 - 105, 2019

Co-author.....

6. Fernández-Alvar, E., Kordopatis, G., Hill, V., Starkenburg, E., **Viswanathan, A.**, Martin, N.F., Thomas, G.F., Navarro, J.F., Malhan, K., Sestito, F. and González Hernández, J.I., 2021. The Pristine survey XIII: uncovering the very metal-poor tail of the thin disc. Monthly Notices of the Royal Astronomical Society, 508(1), pp.1509-1525.
5. Martin, N.F., Ibata, R.A., Starkenburg, E., Yuan, Z., Malhan, K., Bellazzini, M., **Viswanathan, A.**, Aguado, D., Arentsen, A., Bonifacio, P. and Carlberg, R., 2022. The Pristine survey–XVI. The metallicity of 26 stellar streams around the Milky Way detected with the STREAMFINDER in Gaia EDR3. arXiv preprint arXiv:2201.01310.
4. Oria, P.A., Tenachi, W., Ibata, R., Famaey, B., Yuan, Z., Arentsen, A., Martin, N. and **Viswanathan, A.**, 2022. Antaeus: A Retrograde Group of Tidal Debris in the Milky Way's Disk Plane. The Astrophysical Journal Letters, 936(1), p.L3.
3. Tenachi, W., Oria, P.A., Ibata, R., Famaey, B., Yuan, Z., Arentsen, A., Martin, N. and **Viswanathan, A.**, 2022. Typhon: a polar stream from the outer halo raining through the Solar neighborhood. The Astrophysical Journal Letters, 935(2), p.L22.
2. Yuan, Z., Martin, N.F., Ibata, R.A., Caffau, E., Bonifacio, P., Mashonkina, L.I., Errani, R., Doliva-Dolinsky, A., Starkenburg, E., Venn, K.A. and **Viswanathan, A.**, 2022. The Pristine survey–XVII. The C-19 stream is dynamically hot and more extended than previously thought. Monthly Notices of the Royal Astronomical Society, 514(2), pp.1664-1671.
1. Kanagasabai, M., Sambandam, P., Mohammed, G.N.A., Dinesh, N.M., Morais, M.S., **Viswanathan, A.**, Palaniswamy, S.K. and Shrivastav, A., 2020. On the design of frequency reconfigurable tri-band miniaturized antenna for WBAN applications. AEU-International Journal of Electronics and Communications, 127, p.153450.

References

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- o Amina Helmi: ahelmi@astro.rug.nl
- o Sara Ellison: sarae@uvic.ca

Declaration

I do hereby declare that all the details furnished above are true to the best of my knowledge and belief.

Place: Groningen, NL

Date: 15 Jan, 2023

Akshara Viswanathan