# Sumit K. Sarbadhicary – Curriculum Vitae

**Work Address** Center for Cosmology and Astroparticle Physics,
Physics Research Building,
191 West Woodruff Avenue,
Columbus, OH 43215
**Office** M2024
**Email** sarbadhicary.1@osu.edu
**ORCID ID:** 0000-0002-4781-7291

## EMPLOYMENT

**Sep 2021 –** *CCAPP Postdoctoral Fellow*, Astronomy
The Ohio State University

**2018-2021** *Postdoctoral Researcher*, Astronomy
Michigan State University
Supervisor: Laura Chomiuk

## EDUCATION

**2014-2018** PhD, Astronomy - University of Pittsburgh
Advisor: Carles Badenes (Pitt)
**Thesis**: *Progenitor Scenarios of Supernovae from Local Group Stellar Populations and Supernova Remnants*

**2012-2014** M.S., Astronomy
University of Pittsburgh

**2008-2012** B.S., Physics (Astronomy conc.)
Louisiana State University

## PUBLICATIONS

### Lead-author

1. **Sarbadhicary, S. K. et al 2022**, submitted to MNRAS, arXiv:2209.10554
*The possibility of Odd Radio Circles being Supernova Remnants*

2. **Sarbadhicary S.K. et al 2022**, ApJ, 928, 54
*Testing the Momentum-driven Supernova Feedback Paradigm in M31*

3. **Sarbadhicary, S. K. et al 2021**, ApJ, 923, 31 [Citations: 10]
*CHILES VERDES: Radio variability at an unprecedented depth and cadence in the COSMOS field*

4. **Sarbadhicary S.K. et al 2020**, ApJ, 912, 120 [Citations: 2]
*The RR Lyrae Delay-Time Distribution: A Novel Perspective on Models of Old Stellar Populations*

5. **Sarbadhicary, S. K. et al 2019**, ApJ, 872, 191S [Citations: 7]
*The two most recent thermonuclear supernovae in the Local Group: Radio constraints on the progenitors and evolution*

6. **Sarbadhicary, S. K. et al 2017**, MNRAS, 464, 2326. [Citations: 38]
*Supernova Remnants in the Local Group I: A model for the radio luminosity function and visibility times of supernova remnants*

### Co-authored

1. Barnes, A. T. et al (incl. **Sarbadhicary, S. K.**) 2022, accepted to ApJL
*PHANGS-JWST First Results: Multi-wavelength view of feedback-driven bubbles (The Phantom Voids) across NGC 628*
2. Nyamai, M. M. et al (incl. **Sarbadhicary, S. K.**) 2022, submitted to MNRAS, under review
*MeerKAT and VLA observations of the 2019 nova eruption of V3890 Sgr*
3. Chen, N. M. et al (incl. **Sarbadhicary, S. K.**) 2022, submitted to ApJ, under review
*Comparing the locations of supernovae to CO (2-1) emission in their host galaxies*
4. Harris, C. E., **Sarbadhicary, S. K.** et al 2022, submitted to ApJ, under review
*Radio Gaga: Radio Observations of Six Type Ia Supernovae in their Infancy*
5. Dong, Y., Milisavljevic, D., Leja, J., **Sarbadhicary, S. K.** et al 2022, 927, 199 [Citations: 3]
*Physical Properties of the Host galaxies of Ca-rich Transients*
6. Sand, D., **Sarbadhicary, S. K.** et al 2021, ApJ, 922, 21 [Citations: 5]
*Circumstellar Medium Constraints on the Environment of Two Nearby Type Ia Supernovae: SN 2017cbv and SN 2020nlb*
7. Burke J., Howell D. A., **Sarbadhicary S. K.** et al 2021, ApJ, 919, 142 [Citations: 9]
*A Bright Ultraviolet Excess in the Transitional 02es-like Type Ia Supernova 2019yvq*
8. Nyland, K. et al (incl. **Sarbadhicary, S.K.** 2020, ApJ, 905, 74 [Citations: 41]
*Quasars that have Transitioned from Radio-quiet to Radio-loud on Decadal Timescales Revealed by VLASS and FIRST*
9. Pellegrino, C., Howell, D. A., **Sarbadhicary, S. K.** et al 2020, ApJ, 897, 159 [Citations: 10]
*Constraining the Source of the High-velocity Ejecta in Type Ia SN 2019ein*
10. Cendes, Yvette, Drout, Maria R., Chomiuk, Laura, **Sarbadhicary, S. K.** 2020, ApJ, 894, 39 [Citations: 8]
*Thirty Years of Radio Observations of Type Ia SN 1972E and SN 1895B: Constraints on Circumstellar Shells*
11. Launey, K. D., **Sarbadhicary, S. K.** et al 2014, Comp. Physics Communications, 185, 284 [Citations: 8]
*Program in C for studying characteristic properties of two-body interactions in the framework of spectral distribution theory*

## OBSERVING PROPOSALS

### Principal Investigator

- **VLA**: A comprehensive search for late-time radio emission from Type Ia-CSM (9.25 hrs, 23A-328)
- **VLA**: The first radio observation of a Type Ia SN with an optical bump - SN 2019yvq (DDT, 1hr, 19B-346).
- **VLA**: Young Type Ia supernovae in radio – a novel probe of progenitor scenarios (Triggered, 6 hrs, 21B-295)
- **VLA**: VLA observations of the youngest SNe Ia as a novel probe of progenitor scenarios (Triggered, 6 hrs, 20B-355)
- **VLA**: VLA observation of the very young sub-luminous Type Ia SN 2020nlb (DDT, 1 hr, 20A-577)

### Co-investigator

- **ALMA**: Linking the Resolved Filamentary Molecular ISM to Massive Star Formation across M33 (2022.1.00403.S, PI: Eric Koch)
- **SMA**: Resolving the molecular gas fuelling IC 10's starburst on 2.5 pc scales (2022A-S023, PI: Eric Koch)
- *VLA*: A VLA Local Group Legacy Survey - X-Proposal (1800 hrs, 20A-346, PI: A Leroy)
- **Chandra Cycle 22** Pilot study of Radio-changing-state Quasars identified in the VLASS survey (84 ks, PI: K. Nyland)
- **VLBA** Follow-up of VLASS AGN Transients at High redshift (48 hrs, 20A-201, PI: Nyland K.)
- **GMRT Cycle 38** Radio SED Modeling of Compact AGN with Extreme Radio Variability (28 hrs, 38_040, PI: Nyland K.)
- **VLA** The Search for Radio Supernova Remnants in M31 (22.5 hrs, 19A-110, PI: Maldonado, J.)

## STUDENT MENTORING/COLLABORATION

### Graduate Students

- Katie Bowen, *Michigan State University* with Dr. Laura Chomiuk
  (**Thesis topic:** 1.4 GHz Radio-continuum map of IC 1613)
- Ness Mayker Chen, *Ohio State University* with Dr. Adam Leroy
  (**Thesis topic:** Supernova environments in the PHANGS survey)
- Charee Peters, *U Wisconsin, Madison*, with Dr. Laura Chomiuk (now working in private sector)
  (**PhD Thesis**: The Radio Transient and Variable Universe).
- Jessica Maldonado, *Michigan State University*, with Dr. Laura Chomiuk (now working in private sector)
  (**Masters thesis topic:** Radio Supernova Remnants in M31)

### Undergraduate Students

- Jordan Wagner, *The Ohio State University*,
  (**Topic:** Where do massive stars explode in the ISM?)
- Yuxin Dong, *Purdue University, now PhD student at Northwestern University*
  (**Paper**: Physical Properties of the Host galaxies of Ca-rich Transients)
- Jasmin Washington, *U Virginia, now PhD student in U. Arizona* (part of NRAO NAC program for underrepresented minorities in STEM)
  (**AAS 235 Poster**: Constraining Type Ia Supernova Progenitor Environments with Late-Time Radio Observations – 307.11)
- Mairead Heger, *U. Pittsburgh, now PhD student at U. Toronto*
  (**Senior Thesis**: Delay-time distribution of variable stars)
- Hazirah Sanani, *Michigan State University*
  (**Senior Thesis**: A Case Study of Nova Progenitors in the Andromeda Galaxy)
- Christina Conner, *Michigan State University*
  (**Topic**: Optical transients in the COSMOS field)

## HONORS AND AWARDS

- 2019 AAS International Travel Grant
- 2019 NASA Travel Fund for *The Deaths and Afterlives of Massive Stars*
- 2017 Andrew Mellon Pre-doctoral Fellowship
- 2016 Thomas-Lain Scholarship
- 2014 Best Speaker Award (shared w. Amanda Yoho out of 48 speakers), Neighborhood Workshop in Astrophysics and Cosmology, Pennsylvania State University
- 2008-12 LSU Golden Oak Scholarship

## SCIENCE COLLABORATIONS

- **PHANGS survey, (2022-)**, *Supernovae/Supernova remnants/Feedback*
- **SDSS-V (2022-)** *Local Volume Mapper* experiment
- **Local Group L-Band Survey, (2020-)**, *Radio-continuum science leader*
- **VLASS Transients, (2019-20)**, *Scheduling, transients*
- **CHILES-VERDES (2019-21)** (COSMOS HI Large Extragalactic Survey – Variable & Explosive Radio Dynamic Evolution Survey), *Radio variability*
- **ThunderKAT (2020-)** (Astrophysical Transients with MeerKAT) *Type Ia supernovae working group led by Assaf Horesh*

## TALKS

[6 invited + 18 contributed talks. Below are 5 highest visibility talks]

- *Supernova Remnants and their Progenitors, CfA, 2022*
- *ApJ Journal Series*
- *The Deaths and Afterlives of Stars*, STSCI, 2019
- *CCAPP Astro-particle Lunch*, Ohio State University, 2017
- *AAS 231st Meeting*, Washington DC, 2018, Dissertation talk
- *FOE17: Fifty-One-Erg*, Oregon State University, 2017
- *Supernova Remnants: An Odyssey in Space after Stellar Death*, Greece, 2016

## PROFESSIONAL EXPERIENCE

- Organizer: 2022 CCAPP Fellows Symposium, OSU (w. William Luszczak)
- Founder and coordinator of the weekly *Pitt-CMU Astrosnacks* seminars (2014-2017).
- Student representative of 2016, 2018 Astrophysics Faculty Search Committee, University of Pittsburgh
- Participant, 2014, *Summer School in Statistics for Astronomers*, Pennsylvania State University
- Participant, 2014, *SciCoder*, New York University,
- Participant, 2016, *Gas on top of Quasars*, University of Pittsburgh
- Participant, 2016, *Preparing for Supernova Science in the LSST Era*, University of Pittsburgh
- Participant, 2017, *Eta Carinae, LBV and Supernova Imposters*, University of Pittsburgh
- Chambliss Student Award Judge, *AAS 231st Meeting*, Washington DC
- Reviewer: ApJ, MNRAS

## TEACHING

- April 2016: Guest lecturer, Galactic & Extra-galactic Astronomy (Instructor: C. Badenes).
- Sep-Dec, 2013: Teaching Assistant, Stars, Galaxies and Cosmos (Instructor: M. Wood-Vasey)
- June-July 2013: Teaching Assistant, Stars, Galaxies and Cosmos (Instructor: D. Turnshek)
- Jan-April 2013: Teaching Assistant, Basics of Space Flight (Instructor: R. S. Ladbeck)
- Sep-Dec 2012: Teaching Assistant, Basic Physics for Science and Engineering I (Instructor: B. D'urso)
- Sep-Dec 2012: Grader, Physics and Society (Instructor: E. Gerjuoy)

## OUTREACH AND DEI

- 2022: Presenter on JWST-Galaxies, *Friends of Ohio State Astronomy & Astrophysics*
- 2018-21: Presenter, *Astronomy on Tap*, Lansing [Video link]
- 2017: Presenter: *Investing Now* (Science demonstrations as part of a college-preparatory program for pre-college students from historically under-represented groups in STEM), University of Pittsburgh
- 2015-18: Organizer: *Astrosnacks* Career development seminars at Dept of Physics & Astronomy, University of Pittsburgh
- 2016: Telescope operator/presenter: *White House Frontiers Conference Astronomy Night* at Alleghany Observatory, Pittsburgh, PA.
- 2012: Presenter: Open-house nights at Landolt Astronomical Observatory, Baton Rouge, LA.
- 2011: Presenter: *Louisiana Junior Science and Humanities Symposium* (for high-school students), Baton Rouge, LA

## REFERENCES

**Prof. Carles Badenes** (University of Pittsburgh) - badenes@pitt.edu
**Prof. Laura Chomiuk** (Michigan State University) - chomiuk@pa.msu.edu
**Prof. Adam Leroy** (Ohio State University) - leroy.42@osu.edu
**Prof. Dave Sand** (University of Arizona, Tucson) - dave.j.sand@gmail.com