Sameer

Dept. of Physics and Astronomy, University of Notre Dame, Indiana 46556
sameeresque.github.io sameer@nd.edu sameerastro 0000-0001-9966-6790

Circumgalactic medium *Bayesian statistics* *Galaxy evolution*

EDUCATION

2018 – 2022	**Ph.D., Pennsylvania State University**, Astronomy & Astrophysics Minor in Computer Science *Thesis Title: Unveiling the Circumgalactic medium using Cloud-by-cloud, Multiphase, Bayesian Ionization Modeling*
2016 – 2018	**M.S., Pennsylvania State University**, Astronomy & Astrophysics
2007 – 2011	**B.S., Indian Institute of Space Science & Tech.**, Physical Sciences

EMPLOYMENT

2022 – 2025	**Postdoctoral Research Associate** University of Notre Dame, Notre Dame, Indiana, USA
2015 – 2016	**Scientist - SD (Promoted; Observational Astronomer)** Physical Research Laboratory, Ahmedabad, Gujarat, India
2011 – 2015	**Scientist - SC (Mass Spectroscopist)** Physical Research Laboratory, Ahmedabad, Gujarat, India

AWARDS

2023	**International Travel Grant** American Astronomical Society
2022	**Postdoctoral Lightning Talk Competition - Department Prize** College of Science, University of Notre Dame
2018, 2019, 2021	**Zaccheus Daniel Fellowship** Penn State
2016	**Homer F. Braddock/Nellie H. and Oscar L. Roberts Fellowship** Penn State
2011	**Academic Excellence Award** Indian Institute of Space Science & Technology
2007 – 2011	**Full-tuition scholarship** Indian Institute of Space Science & Technology

GRANTS & AWARDED RESEARCH PROGRAMS

2024	**HST program 17862, Co-I** (Cycle 32) Illuminating the Dark Ages of Metal Evolution: An HST Legacy Survey at Cosmic Noon

2022 **GBT program 22B-350, Co-I**
Project AMIGA: The Circumgalactic Medium of M31 – Mapping the inner halo

2022 **HST program 17051, Co-I** (Cycle 30)
A ULLYSES Survey of the Magellanic Clouds: a Laboratory for the Physics of Interfaces between Hot and Cold Gas

2021 **HST program 16607, Co-PI ($295,000)** (Cycle 29)
Is There a Relationship Between the Metallicity of the Circumgalactic Medium and the Galaxy Orientation?

INVITED TALKS

2024 **1. Tracing Galaxy Environments using Metal Absorption Signatures across Cosmic History** (Feb 20)
University of Washington, Seattle

2022 **2. Probing the physicochemical properties of the Leo Ring and the Leo I group** (Jan 27)
Carnegie Tea Talk, Virtual, Carnegie Observatories

2021 **3. Investigating the origin of multiphase, multicomponent absorption in an Ultrastrong Mg II absorber using the CMBM approach** (Aug 19)
Baltimore Winds Workshop, Johns Hopkins University

2020 **4. Unveiling the nature of the circumgalactic medium** (Oct 29)
Data Science Consortium, Virtual, University of Michigan

5. Automated extraction of multiphase conditions of QALs using Bayesian Modeling with cloudy (Jun 19)
Department Colloquium, Astronomy & Astrophysics, Virtual, New Mexico State University

CONTRIBUTED TALKS

2024 1. Discussion lead (Sept 11) - Bridging CGM observations, models, and simulations
(Sept 10) - Cold Gas in the CGM
A Holistic Understanding of the Multi-scale, Multiphase CGM, Aspen Center for Physics (Sept 1 – 15), CO
2. Resolving the CGM in Theory & Observations (Aug 21 – 23), Harvard University
3. FOGGIE Retreat (May 06 – 09), Michigan State

2023 4. Oases in the Cosmic Desert: Understanding the Structure of the Circumgalactic Medium (Feb 21 – 23), Arizona State University

2022 5. Dissertation Talk (Jun 16), AAS 240, Pasadena

	6. Thesis Defense Talk (Jun 10), Penn State
2021	7. STARs Lab Meeting (Nov 5), Virtual, Arizona State University
	8. Milky Way Halo Research Group Meeting (Oct 15), Virtual, STScI
	9. Lunch Talk (Sep 21), Virtual, Penn State
	10. Galread Extragalactic Discussion Group (Apr 5), Virtual, Princeton
	11. High Energy Astro Group Seminar (Mar 25), Virtual, MIT
	12. Lunch Talk (Mar 23), Virtual, Penn State
	13. Tutorial contributor & presenter (Jan 20) Fundamentals of Gaseous Halos (Jan 11 – Mar 5), Virtual, UCSB
2018	14. Central Pennsylvania Consortium Astronomers' Meeting (Apr 19), Dickinson College, PA
	15. Lunch Talk (Feb 27), Penn State

POSTER PRESENTATIONS

2021	1. Statistical Challenges in Modern Astronomy VII (June 9) Virtual, Penn State
	2. American Astronomical Society (Jan 11 – 15), Virtual
2019	3. American Astronomical Society (Jan 6 – 10), University of Washington
2018	4. Astrophysical Frontiers in the Next Decade and Beyond (Jun 26 – 29), Portland, Oregon

TEACHING EXPERIENCE

Spring 2024 –	**Physics Teaching Practicum** Kaneb Center for Teaching Excellence, Notre Dame • Modern Physics from Quarks to Quasars • Engineering Physics II • Electricity & Magnetism
Fall 2019	**Course Grader**, ASTRO 7N Artistic Universe - Concepts of astronomy through gaming, Penn State
Summer 2019	**Canvas Web Development**, ASTRO 10 Elementary Astronomy, Penn State
Fall 2018,	**Course Grader**, ASTRO 451 Astrophysical Techniques, Penn State

Spring 2018, Spring 2017, Fall 2016	**Instructor**, ASTRO 11 Astronomy for non-science majors, Penn State
Spring 2018	**Course Grader**, ASTRO 292 Astronomy of the Distant Universe, Penn State
Fall 2017	**Course Grader**, ASTRO 291 Astronomical Methods and the Solar System, Penn State
Spring 2017	**Course Grader**, ASTRO 130 Black Holes in the Universe, Penn State
Fall 2016	**Lab Supervisor & Course Grader**, ASTRO 320 Observational Astronomy & Experimental Physics, Penn State

MENTORING EXPERIENCE

2024 –	**Kshitij Chavan**, Graduate student Inter-University Center for Astronomy & Astrophysics, Pune, India Advising research
2023 –	**Enosh Kallely**, Undergraduate student Dept. of Physics & Astronomy, Notre Dame Directing undergraduate non-thesis research & Advising research
2022 –	**Purvi Udhwani**, Graduate student Dept. of Astronomy & Astrophysics, Australian National University Advising research
2021 – 2023	**Shengdi You**, Undergraduate student Dept. of Astronomy & Astrophysics, Penn State Advised undergraduate thesis research
2015 – 2016	**Navpreet Kaur**, Graduate student Astronomy & Astrophysics Division, Physical Research Laboratory, India Mentored thesis research

OBSERVING EXPERIENCE

2015 – 2016	1.2-metre Telescope, Mt. Abu, Rajasthan, India Monitoring of blazar variability using optical and infrared photometric imaging.

SUPERCOMPUTING ALLOCATIONS

2022 – 2024	**ACCESS Allocation, PI** (8900 node-hours) PHY220103: Development of Emulators for Accurate and Faster Ionization Modeling of Absorption Line Systems
2019 – 2022	**XSEDE Allocation, Co-PI** (1280 node-hours) PHY210047: Multiphase, Cloud-by-Cloud, Bayesian Analysis of the Relationship Between the Metallicity of the Circumgalactic Medium and Galaxy Orientation

PROFESSIONAL SERVICE & OUTREACH

2023 –	**Referee for MNRAS, ApJ, JCAP**
2021 –	**Outreach talks** Space Telescope Science Institute Public Outreach, Virtual
2021	**AAS Chambliss Judge** Judge for iPoster presentations, Virtual
2016 – 2019	**ASTROFEST** Organizing and setting up telescopes for public viewing at Penn State
2011 – 2014	**Conducted mass spectroscopy demonstrations and presented meteorite exhibits** NanoSIMS Lab, Physical Research Laboratory

PRESS COVERAGE

Black & bright: PRL joins world to gauge black hole spin. Times of India, May 2016

REFERENCES

Nicolas Lehner
Research Professor
Department of Physics and Astronomy
University of Notre Dame
nlehner@nd.edu
+1 574-220-2927

Jay Christopher Howk
Professor
Department of Physics and Astronomy
University of Notre Dame
jhowk@nd.edu
+1 574-631-8594

Jane C. Charlton
Professor
Department of Astronomy and Astrophysics
Pennsylvania State University
jcc12@psu.edu
+1 814-571-7226

Christopher W. Churchill
Professor
Department of Astronomy
New Mexico State University
cwc@nmsu.edu
+1 575-636-3808

Glenn G. Kacprzak
Associate Professor
Centre for Astrophysics and Supercomputing
Swinburne University of Technology
gkacprzak@swin.edu.au
+61 3 9214 5439

Anand Narayanan
Professor
Department of Earth and Space Sciences
Indian Institute of Space Science and Tech.
anand@iist.ac.in
+91 94959 60960