SAMEER

Dept. of Physics & Astronomy, University of Notre Dame, Indiana 46556
sameeresque.github.io sameer@nd.edu https://www.linkedin.com/in/sameerastro/

EMPLOYMENT

Postdoctoral Research Associate *September 2022 - August 2025*
University of Notre Dame *Notre Dame, Indiana, USA*

Scientist - SD (Promoted; Observational Astronomer) *August 2015 - August 2016*
Physical Research Laboratory *Ahmedabad, Gujarat, India*

Scientist - SC (Mass Spectroscopist) *August 2011 - August 2015*
Physical Research Laboratory *Ahmedabad, Gujarat, India*

EDUCATION

Ph.D., Astronomy & Astrophysics (Minor in Comp. Science) *August 2018 - August 2022*
Pennsylvania State University *University Park, PA, USA*

M. S. in Astronomy & Astrophysics *August 2016 - August 2018*
Pennsylvania State University *University Park, PA, USA*

B. S. in Astronomy & Astrophysics *August 2007 - August 2011*
Indian Institute of Space Science & Technology *Trivandrum, Kerala, India*

AWARDS

Internationational Travel Grant *2023*
American Astronomical Society

Postdoctoral Lighting Talk Competition - Department Prize *2022*
College of Science, University of Notre Dame

Zaccheus Daniel Fellowship *2018, 2019, 2021*
Penn State

Homer F. Braddock/Nellie H. and Oscar L. Roberts Fellowship *2016*
Penn State

Academic Excellence Award *2011*
Indian Institute of Space Science & Technology

Full-tuition scholarship *2007 - 2011*
Indian Institute of Space Science & Technology

GRANTS

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

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

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

SUPERCOMPUTING ALLOCATIONS

ACCESS Allocation, PI *8900 node-hours, 2022 - 2024*
PHY220103: Development of Emulators for Accurate and Faster Ionization Modeling of Absorption Line Systems

XSEDE Allocation, Co - PI *1280 node-hours, 2019 - 2022*
PHY210047: Multiphase, Cloud-by-Cloud, Bayesian Analysis of the Relationship Between the Metallicity of the Circumgalactic Medium and Galaxy Orientation

MENTORING EXPERIENCE

Saloni Deepak, Graduate student (NSF FINESST Fellow) *Fall 2022-*
Dept. of Physics & Astronomy, Notre Dame

Enosh Kallely, Undergraduate student *Spring 2023-*
Dept. of Physics & Astronomy, Notre Dame

Purvi Udhwani, Graduate student *Spring 2022-*
Dept. of Astronomy & Astrophysics, Australian National University

Kshitij Chauhan, Graduate student *Spring 2024 -*
Inter University Center for Astronomy & Astrophysics, Pune, India

Shengdi You, Undergraduate student *Fall 2021-Spring 2023*
Dept. of Astronomy & Astrophysics, Penn State

TEACHING EXPERIENCE

Certificate Course in Teaching *Spring 2024 -*
Kaneb Center for Teaching Excellence, Notre Dame

Teaching Assistant, Penn State *Fall 2019*
Artistic Universe - Basic concepts of astronomy through gaming (ASTRO-7N)

Instructor, Penn State *Spring 2018, Spring 2017, Fall 2016*
Introduction to Astronomy for non science majors (ASTRO 11)

Teaching Assistant, Penn State *Fall 2016*
Observational Astronomy & Experimental Physics (ASTRO 320)

CONFERENCES, TALKS & COLLOQUIA

Discussion lead - Cold Gas in the CGM *Sept 10, 2024*
A Holistic Understanding of the Multi-scale, Multiphase CGM *Aspen Center for Physics*

Discussion lead - Bridging CGM observations, models, and simulations *Sept 11, 2024*
A Holistic Understanding of the Multi-scale, Multiphase CGM *Aspen Center for Physics*

Participant *Sept 1–15, 2024*
A Holistic Understanding of the Multi-scale, Multiphase CGM *Aspen Center for Physics*

Contributed Talk	*Aug 21, 2024*
Resolving the CGM in Theory & Observations	*Harvard University*
Participant	*July 15–19, 2024*
Code/Astro	*Northwestern University*
Contributed Talk	*May 07, 2024*
FOGGIE Retreat	*Michigan State*
Invited Talk	*February 20, 2024*
University of Washington	*Seattle*
Department Seminar	*October 31, 2023*
University of Notre Dame	*Notre Dame*
Contributed Talk	*February 21, 2023*
Structure of the CGM	*Arizona State University*
Department Seminar	*November 22, 2022*
University of Notre Dame	*Notre Dame*
Dissertation Talk	*June 16, 2022*
AAS 240	*Pasadena*
Invited Talk	*January 27, 2022*
Carnegie Tea Talk	*Online, Carnegie Observatories*
Contributed Talk	*November 5, 2021*
STARs Lab Meeting	*Online, ASU*
Contributed Talk	*October 15, 2021*
Milky Way Halo Research Group Meeting	*Online, STScI*
Contributed Talk	*September 21, 2021*
Lunch Talk	*Online, Penn State*
Invited Talk	*August 19, 2021*
Baltimore Winds Workshop	*Johns Hopkins University*
Contributed Talk	*April 5, 2021*
Galread Extragalactic Discussion Group	*Online, Princeton*
Contributed Talk	*March 25, 2021*
High Energy Astro Group Seminar	*Online, MIT*
Contributed Talk	*March 23, 2021*
Lunch Talk	*Online, Penn State*
Tutorial contributor & presenter	*Jan 20, 2021*
Fundamentals of Gaseous Halos	*Online, UCSB*
Invited presentation	*Oct 29, 2020*
Data Science Consortium	*Online, University of Michigan*
Department Colloquium	*June 19, 2020*
Astronomy & Astrophysics	*Online, New Mexico State University*

PROFESSIONAL SERVICE & OUTREACH

Reviewer for MNRAS, ApJ, JCAP *2023-*

Subject Matter Expert *2021-*
Space Telescope Science Institute Public Outreach *Online*

AAS Chambliss Judge *2021*
Judge for iPoster presentations *Online*

ASTROFEST *2016-2019*
Organizing and setting up telescopes for public viewing Penn State

StackOverflow contributor (reached > 80,000 people) *2018-Present*

Mass spectroscopy demonstrations & Meteorite exhibitionist *2011-2014*
NanoSIMS Lab, Physical Research Laboratory

PRESS COVERAGE

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

REFEREED PUBLICATIONS (ADS): 525 CITATIONS, H-INDEX: 13

Primary author

Sameer, Lehner, N., Howk, J. C., Fox, A. J., O'Meara, J. M., & Oppenheimer, B. D. (2024). The COS CGM Compendium. V: the dichotomy in the properties of OVI associated with the low- and high-Metallicity HI-bearing gas. *arXiv e-prints*, Article arXiv:2403.02374, arXiv:2403.02374. https://doi.org/10.48550/arXiv.2403.02374

Sameer, Charlton, J. C., Wakker, B. P., Kacprzak, G. G., Nielsen, N. M., Churchill, C. W., Richter, P., Muzahid, S., Ho, S. H., Nateghi, H., Rosenwasser, B., Narayanan, A., & Ganguly, R. (2024). Cloud-by-cloud multiphase investigation of the circumgalactic medium of low-redshift galaxies. MNRAS. https://doi.org/10.1093/mnras/stae962

Sameer, Charlton, J. C., Kacprzak, G. G., Narayanan, A., Sankar, S., Richter, P., Wakker, B. P., Nielsen, N. M., & Churchill, C. W. (2022). Probing the physicochemical properties of the Leo Ring and the Leo I group. MNRAS, *510*(4), 5796–5820. https://doi.org/10.1093/mnras/stac052

Sameer, Charlton, J. C., Norris, J. M., Gebhardt, M., Churchill, C. W., Kacprzak, G. G., Muzahid, S., Narayanan, A., Nielsen, N. M., Richter, P., & Wakker, B. P. (2021). Cloud-by-cloud, multiphase, Bayesian modelling: application to four weak, low-ionization absorbers. MNRAS, *501*(2), 2112–2139. https://doi.org/10.1093/mnras/staa3754

Sameer, Brandt, W. N., Anderson, S., Hall, P. B., Vivek, M., Filiz Ak, N., Grier, C. J., Ahmed, N. S., Luo, B., Myers, A. D., Rodríguez Hidalgo, P., Ruan, J., & Schneider, D. P. (2019). X-ray and multi-epoch optical/UV investigations of BAL to non-BAL quasar transformations. MNRAS, *482*(1), 1121–1134. https://doi.org/10.1093/mnras/sty2718

Co-author with major contribution

Nateghi, H., Kacprzak, G. G., Nielsen, N. M., Murphy, M. T., Churchill, C. W., Muzahid, S., **Sameer**, & Charlton, J. C. (2024). Signatures of gas flows - I. Connecting the kinematics

of the H I circumgalactic medium to galaxy rotation. MNRAS, *533*(2), 1321–1340. https://doi.org/10.1093/mnras/stae1843

Fernández-Figueroa, A., Kacprzak, G. G., Nielsen, N. M., Barone, T. M., Nateghi, H., **Sameer**, Fisher, D. B., & Chu, B. R. (2024). Unveiling the complex circumgalactic medium: a comparative study of merging and non-interacting galaxy groups. MNRAS, *531*(3), 3658–3677. https://doi.org/10.1093/mnras/stae1332

Hafen, Z., **Sameer**, Hummels, C., Charlton, J., Mandelker, N., Wijers, N., Bullock, J., Faerman, Y., Lehner, N., & Stern, J. (2024). The Halo21 absorption modelling challenge: lessons from 'observing' synthetic circumgalactic absorption spectra. MNRAS, *528*(1), 39–60. https://doi.org/10.1093/mnras/stad3889

Nateghi, H., Kacprzak, G. G., Nielsen, N. M., **Sameer**, Murphy, M. T., Churchill, C. W., & Charlton, J. C. (2023). Signatures of gas flows-II: Connecting the kinematics of the multiphase circumgalactic medium to galaxy rotation. *arXiv e-prints*, Article arXiv:2311.05165, arXiv:2311.05165

Nielsen, N. M., Kacprzak, G. G., **Sameer**, Murphy, M. T., Nateghi, H., Charlton, J. C., & Churchill, C. W. (2022). A complex multiphase DLA associated with a compact group at z = 2.431 traces accretion, outflows, and tidal streams. MNRAS, *514*(4), 6074–6101. https://doi.org/10.1093/mnras/stac1824

Narayanan, A., **Sameer**, Muzahid, S., Johnson, S. D., Udhwani, P., Charlton, J. C., Mauerhofer, V., Schaye, J., & Yadav, M. (2021). A partial Lyman limit system tracing intragroup gas at z ≈ 0.8 towards HE 1003 + 0149. MNRAS, *505*(1), 738–754. https://doi.org/10.1093/mnras/stab1315

Kaur, N., **Sameer**, Baliyan, K. S., & Ganesh, S. (2017). Optical intra-day variability in 3C 66A: A decade of observations. MNRAS, *469*(2), 2305–2312. https://doi.org/10.1093/mnras/stx965

Mishra, R. K., Marhas, K. K., & **Sameer**. (2016). Abundance of ^{60}Fe inferred from nanoSIMS study of QUE 97008 (L3.05) chondrules. *Earth and Planetary Science Letters*, *436*, 71–81. https://doi.org/10.1016/j.epsl.2015.12.007

Dorigo Jones, J., Johnson, S. D., Muzahid, S., Charlton, J., Chen, H. .-., Narayanan, A., **Sameer**, Schaye, J., & Wijers, N. A. (2022). Improving blazar redshift constraints with the edge of the Ly α forest: 1ES 1553+113 and implications for observations of the WHIM. MNRAS, *509*(3), 4330–4343. https://doi.org/10.1093/mnras/stab3331

Marra, R., Churchill, C. W., Doughty, C., Kacprzak, G. G., Charlton, J., **Sameer**, Nielsen, N. M., Ceverino, D., & Trujillo-Gomez, S. (2021). Using cosmological simulations and synthetic absorption spectra to assess the accuracy of observationally derived CGM metallicities. MNRAS, *508*(4), 4938–4951. https://doi.org/10.1093/mnras/stab2896

Pradeep, J., Sankar, S., Umasree, T. M., Narayanan, A., Khaire, V., Gebhardt, M., **Sameer**, & Charlton, J. (2020). Solar-metallicity gas in the extended halo of a galaxy at z ∼ 0.12. MNRAS, *493*(1), 250–266. https://doi.org/10.1093/mnras/staa184

Yi, W., Vivek, M., Brandt, W. N., Wang, T., Timlin, J., Filiz Ak, N., Schneider, D. P., Fynbo, J. P. U., Ni, Q., Vito, F., Indahl, B. L., & **Sameer**. (2019). Broad Absorption Line Disappearance/Emergence in Multiple Ions in a Weak Emission-line Quasar. ApJ, *870*(2), Article L25,

L25. https://doi.org/10.3847/2041-8213/aafc1d

Dey, L., Valtonen, M. J., Gopakumar, A., Zola, S., ..., **Sameer**, Ciprini, S., Matsumoto, K., Sadakane, K., Kidger, M., Nilsson, K., Mikkola, S., Sillanpää, A., Takalo, L. O., Lehto, H. J., Berdyugin, A., Piirola, V., Jermak, H., Baliyan, K. S., ... Zielinski, P. (2018). Authenticating the Presence of a Relativistic Massive Black Hole Binary in OJ 287 Using Its General Relativity Centenary Flare: Improved Orbital Parameters. ApJ, *866*(1), Article 11, 11. https://doi.org/10.3847/1538-4357/aadd95

Goyal, A., Stawarz, Ł., Zola, S., Marchenko, V., ..., **Sameer**, Ciprini, S., Baran, A., Ostrowski, M., Wiita, P. J., Gopal-Krishna, Siemiginowska, A., Simon, A. O., Siwak, M., Schweyer, T., Soldán Alfaro, F. C., Sonbas, E., Strobl, J., Takalo, L. O., ... Giroletti, M. (2018). Stochastic Modeling of Multiwavelength Variability of the Classical BL Lac Object OJ 287 on Timescales Ranging from Decades to Hours. ApJ, *863*(2), Article 175, 175. https://doi.org/10.3847/1538-4357/aad2de

Kaur, N., Baliyan, K. S., Chandra, S., **Sameer**, & Ganesh, S. (2018). Optical Variability in IBL S5 0716+714 during the 2013-2015 Outbursts. AJ, *156*(1), Article 36, 36. https://doi.org/10.3847/1538-3881/aac5e4

Kaur, N., Chandra, S., Baliyan, K. S., **Sameer**, & Ganesh, S. (2017). A Multiwavelength Study of Flaring Activity in the High-energy Peaked BL Lac Object 1ES 1959+650 During 2015-2016. ApJ, *846*(2), Article 158, 158. https://doi.org/10.3847/1538-4357/aa86b0

Ahnen, M. L., Ansoldi, S., Antonelli, L. A., Arcaro, C., ..., **Sameer**, Bangale, P., Barres de Almeida, U., Barrio, J. A., Bednarek, W., Bernardini, E., Berti, A., Biasuzzi, B., Biland, A., Blanch, O., Bonnefoy, S., Bonnoli, G., Borracci, F., Bretz, T., ... Grishina, T. S. (2017). Multiwavelength observations of a VHE gamma-ray flare from PKS 1510-089 in 2015. A&A, *603*, Article A29, A29. https://doi.org/10.1051/0004-6361/201629960

Zola, S., Valtonen, M., Bhatta, G., Goyal, A., ..., **Sameer**, Krzesinski, J., Siwak, M., Ciprini, S., Gopakumar, A., Jermak, H., Nilsson, K., Reichart, D., Matsumoto, K., Sadakane, K., Gazeas, K., Kidger, M., Piirola, V., Alicavus, F., ... Blay, P. (2016). A Search for QPOs in the Blazar OJ287: Preliminary Results from the 2015/2016 Observing Campaign. *Galaxies*, *4*(4), 41. https://doi.org/10.3390/galaxies4040041

Baliyan, K. S., Kaur, N., Chandra, S., **Sameer, S.**, & Ganesh, S. (2016). Multi-wavelength Study of Blazars Using Variability as a Tool. *Journal of Astronomy and Space Sciences*, *33*, 177–183. https://doi.org/10.5140/JASS.2016.33.3.177

Valtonen, M. J., Zola, S., Ciprini, S., Gopakumar, A., ..., **Sameer**, Kidger, M., Gazeas, K., Nilsson, K., Berdyugin, A., Piirola, V., Jermak, H., Baliyan, K. S., Alicavus, F., Boyd, D., Campas Torrent, M., Campos, F., Carrillo Gómez, J., Caton, D. B., ... Blay, P. (2016). Primary Black Hole Spin in OJ 287 as Determined by the General Relativity Centenary Flare. ApJ, *819*(2), Article L37, L37. https://doi.org/10.3847/2041-8205/819/2/L37