

BEENA MEENA

bmeena@astro.gsu.edu \diamond www.astro.gsu.edu/~bmeena

Georgia State University, Department of Physics and Astronomy

25 Park Place, 605 \diamond Atlanta, GA 30302

RESEARCH INTERESTS

Supermassive Black Holes, Active Galactic Nuclei (AGN), AGN Outflows, AGN Feedback, Gas Kinematics, Galaxy Mass and Rotation, Hubble Space Telescope Spectroscopy and Imaging, Ground Based Observing (Spectroscopy and Broadband Imaging), Integral Field Unit (IFU) Spectroscopy

EDUCATION

Ph.D. in Physics with Astronomy Concentration <i>Georgia State University</i>	Spring 2022 (Expected)
M.S. in Physics <i>Georgia State University</i>	2018
M.Tech. in Opto-electronics & Optical Communication Engineering <i>Indian Institute of Technology, Delhi</i>	2013
B.Tech. in Electronics & Communication Engineering <i>Govt. Engineering College, Ajmer</i>	2010

EMPLOYMENT

Graduate Teaching/Research Assistant <i>Georgia State University</i>	Aug 2015 - Present
Intellectual Property Researcher <i>CPA Global, India</i>	Jan 2014 - Aug 2015
Assistant Professor <i>JECRC University, Jaipur</i>	Jul 2013 - Dec 2013
Graduate Teaching Assistant <i>Indian Institute of Technology, Delhi</i>	Jul 2011 - May 2013

AWARDS & SCHOLARSHIPS

Provost's Dissertation Fellowship <i>Georgia State University, USA</i>	2021
First place Georgia State University Three Minute Thesis (3MT) Competition <i>Georgia State University, USA</i>	2020
International Astronomical Union (IAU) Symposium - 359 Travel Grant <i>Bento Gonçalves, Brazil</i>	2020
Atlanta Science Communication Fellowship <i>Atlanta Science Festival, Atlanta, GA</i>	2019
Graduate Aptitude Test in Engineering (GATE) Scholarship <i>Ministry of Human Resource Development (MHRD), India</i>	2011
Gargi Award <i>Balika Shiksha Foundation, Govt. of Rajasthan, India</i>	2005

ACCEPTED PROPOSAL

Are Narrow Line Region Outflows an Effective Mode of AGN Feedback?

Co-I

Hubble Space Telescope - Cycle 28

RESEARCH EXPERIENCE

Extragalactic Astronomy

Sept 2018 - Present

Advisor: Dr. D. Michael Crenshaw

Georgia State University

- Identifying the extents and launching sites of AGN-driven outflows using optical spectroscopic and imaging observations

High Energy Particle Physics

Sept 2016 - Aug 2018

Advisor: Dr. Xiaochun He

Georgia State University

- Particle detector development and study of atmospheric temperature variations using Cosmic (CR) measurements

Master's Thesis Project: Plasmonics & Nano-photonics

Jun 2012 - May 2013

Advisor: Dr. Anuj Dhawan

Indian Institute of Technology, Delhi

- Designing palladium-coated plasmonic gas sensors using numerical simulations

OBSERVING AND ANALYSIS EXPERIENCE

Astrophysical Research Consortium 3.5-meter Telescope

Nov 2018 - Present

Apache Point Observatory, Sunspot, NM

Total: 200 hrs

- Optical long slit spectroscopy with Dual Imaging Spectrograph (DIS)
- Optical imaging using Astrophysical Research Consortium Telescope Imaging Camera (ARCTIC)
- Planned and lead observations and data reduction of optical images and spectra

Hubble Space Telescope (HST)

Sept 2018 - Present

- Data reduction and analysis of Space Telescope Imaging Spectrograph (STIS) long slit spectra and Advanced Camera for Surveys (ACS)/Wide Field Camera 3 (WFC3) images

Hard Labor Creek Observatory, Rutledge, GA

Feb 2019

Georgia State University

- Photo-metric monitoring of asteroids

TEACHING EXPERIENCE

Graduate Teaching Assistant

Aug 2015 - May 2018

Georgia State University, Atlanta

- Volunteer instructor for Introductory Astronomy lab (solar system and basic telescopes) in Fall 2019
- Instructor for Introductory Physics labs (Optics and Electromagnetism)
- Teaching assistant and substitute teacher (2 lectures) for Advanced Physics labs that involved teaching basic computer and software skills e.g., LINUX, Arduino, LABVIEW ROOT, and Python, to undergraduate students

Assistant Professor

Jul 2013 - Dec 2013

JECRC University, Jaipur

- Lecture: Engineering Physics
- Lecture: Electronics Devices and Circuits
- Laboratory: Engineering Physics

Graduate Teaching Assistant

Aug 2011 - May 2013

Indian Institute of Technology, Delhi

- Substitute lecturer (3 lectures) for Principles of Electrical Engineering
- Prepared lectures, tutorials and assignments (Principles of Electrical Engineering)

LEADERSHIP & OUTREACH

Media/Writing

“Science of Track Cycling”, Awesome Science of Everyday Life, Atlanta Science Festival: <https://scienceatl.org/science-of-track-cycling/>

President

Aug 2017 - Jul 2018

Women in Physics (WiP), Georgia State University

- Recruited WiP members and officers, improved the graduate student participation by two times and undergraduate students by three times.
- Organized monthly coffee hours with physicists and astronomers at GSU, GaTech and CERN
- Planned and organized ‘Women in STEM’ conference in collaboration with other STEM organizations at GSU and with WiP chapters at Georgia Tech, Kenessaw State University and Agnes Scott College.

Graduate Student Ambassador

Jan 2019 - Present

GOT Space (Georgia Outreach Team for Space)

- Maynard Holbrook Jackson High School Presentation on ‘Galaxy in Radio’ (Jan 2019)
- Lanier High School Presentation on ‘Galaxy Rotation’ and ‘Women in Physics at GSU’ (Apr 2019)
- Trip Elementary School STEM Night: demonstrated cool dry ice experiments (Jan 2020)
- Wolf Creek Elementary School Virtual Presentation: ‘Make a Comet on a Stick’ (Feb 2021)
- Space ATL Space Party at the Park: ‘Phases of Moon’ (Oct 2021)

Hard Labor Creek Observatory Open House

Mar 2019 - Jan 2020

Georgia State University

- Helped set up telescopes for public to view of several astronomical objects during the open house.

Public viewing of Mercury Transit

Nov 2019

Georgia State University, Downtown campus

- Helped set up the Coronado solar scopes and assisted public to observe transit of Mercury

Total Solar Eclipse Viewing Party

Aug 2017

Rabun Gap-Nacoochee School; partly organized by Georgia State University

- Lead the children’s pinhole camera activity at the event.

Cloud Chamber Experiment

Fall 2017, Spring 2018

Georgia State University

- Helped set up a semi-annual cloud chamber experiment at GSU for public and illustrated the cosmic particle interaction with matter.

Atlanta Science Festival

Mar 2017

Georgia State University

- Public demonstration of Geiger counter and explained the effects of radiation on health and talked about cosmic ray research at GSU.

DEPARTMENTAL SERVICE

- Currently serving on the Department Colloquium Committee as the Astronomy student representative.
- Served on the grad students committee on the extra-galactic faculty hiring process and provided feedback

MENTORING

Julia Falcone - Grad Student, Georgia State University	Fall 2020-Present
Garrett Polak - Undergraduate Student, Georgia State University	Summer 2019-Present
Francisco Martinez - Undergraduate Student, Georgia State University	Fall 2018-Summer 2019
Sumantha Rotti (Astropal Mentee) - Grad Student, Georgia State University	Summer 2019-Spring 2020
Rongsheng Li - Summer Intern, Georgia State University	Summer 2017

TECHNICAL SKILLS

Programming Language

- Expert: Python, R, bash
- Intermediate Proficiency: IDL, Mathematica, html/css
- Limited Proficiency: C++, Matlab, SQL query

Software and Packages

- Astronomy: Astropy, IRAF/PyRAF, DS9, GalFit, DiskFit, Cloudy
- Others: LaTeX, MS Office, Git Repository

ASSOCIATED MEMBERSHIPS

American Astronomical Society	Oct 2018 - Present
American Physical Society	Jan 2016 - Nov 2018
FY18 and FY19 Budget Review COAS Student Committee, GSU	Fall 2015 - Spring 2018
Women in Physics at GSU	Sept 2015 - Present
Physics Graduate Student Association (PGSA), GSU	Sept 2015 - Present
AstroPal at GSU	Sept 2018 - Present

LANGUAGE FLUENCY

Hindi (native), English (fluent)

BIBLIOGRAPHY

In preparation

“Probing the Outflow Launching Sites in Nearby Seyfert Galaxies Using Radiative Driving Models”, **Meena, B. et al.**, to be submitted to ApJ

Publications in Refereed Journals

4 publications: 1 first-author, 3 co-author

A list of selected publications can be found on ORCID, [Here](#)

1. **Meena, B.**; Crenshaw, D. M. ; Schmitt , H. R.; Revalski , M.; Fischer, T. C.; Polack, G. E.; Kraemer S. B. ; Dashtamirova, D., “Radiative Driving of the AGN Outflows in the Narrow-Line Seyfert 1 Galaxy NGC 4051”, 2021 ApJ, 916, 31
2. Robinson, J. H; Bentz, M. C; Courtois, H. M.; Johnson, M. C.; Crenshaw, D. M.; **Meena, B.**; Polack, G. E.; Silverstein, M. L.; Chen, D, “Tully-Fisher Distances and Dynamical Mass Constraints for 24 Host Galaxies of Reverberation-Mapped AGN”, 2021, ApJ 912, 160
3. Revalski, M.; **Meena, B.**; Martinez, F.; Polack, G. E.; Crenshaw, D. M.; Kraemer, S. B.; Collins, N. R.; Fischer, T. C.; Schmitt, H. R.; Schmidt, J.; Maksym, W. P.; Rafelski, M., “Quantifying Feedback from Narrow Line Region Outflows in Nearby Active Galaxies – III. Results for the Seyfert 2 Galaxies Markarian 3, Markarian 78, and NGC 1068”, 2021, ApJ, 910, 139
4. Gnilka, C. L.; Crenshaw, D. M.; Fischer, T. C.; Revalski, M.; **Meena, B.**; Martinez, F.; Polack, G. E.; Machuca, C.; Dashtamirova, D.; Kraemer, S. B.; Schmitt, H. R.; Riffel, R. A.; Storchi-Bergmann, T., “Gemini Near-Infrared Field Spectrograph Observations of the Seyfert 2 Galaxy Mrk 3: Feeding and Feedback on Galactic and Nuclear Scales”, 2020, ApJ, 893, 1

Publications in Refereed Proceedings

2 publications: 1 first-author, 1 co-author

1. **Meena, B.**; Crenshaw, D. M.; Fischer, T. C.; Schmitt, H. R.; Revalski; M., Polack, G. E., “Identifying the Extent of AGN Outflows using Spatially Resolved Gas Kinematics”, Galaxy Evolution and Feedback Across Different Environments (GALFEED)-IAU Symposium, 2021, 359, 285
2. Crenshaw, D. M.; Gnilka, C. L.; Fischer, T. C.; Revalski, M.; **Meena, B.**; Martinez, F.; Polack, G. E.; Machuca, C.; Dashtamirova, D.; Kraemer, S. B.; Schmitt, H. R., “Observations of AGN Feeding and Feedback on Nuclear, Galactic, and Extragalactic Scales”, 2021, Galaxy Evolution and Feedback Across Different Environments (GALFEED)-IAU Symposium, 2021, 359, 318

Conference Talks

1. **Meena, B.**; Crenshaw, D. M.; Fischer, T. C.; Schmitt, H. R.; Revalski, M.; Polack, G. E., Falcone, J. “Probing the launching sites of AGN-driven outflows in nearby Seyfert galaxies”, Young Astronomers on Galactic Nuclei meeting 2021
2. Revalski, M.; **Meena, B.**; Martinez, F.; Crenshaw, D. M.; Kraemer, S. B.; Collins, N. R.; Fischer, T. C.; Schmitt, H. R.; Polack, G. E.; Rafelski, M., “Measuring the spatially resolved mass outflow rates of ionized gas in nearby AGN”, Young Astronomers on Galactic Nuclei meeting 2021
3. **Meena, B.**; Crenshaw, D. M.; Fischer, T. C.; Schmitt, H. R.; Revalski, M.; Polack, G. E., Falcone, J. “Investigating the origins of AGN outflows using radiative driving models in nearby Seyfert galaxies”, Talk Number 8, APO Symposium 2021
4. **Meena, B.**; Crenshaw, D. M.; Fischer, T. C.; Schmitt, H. R.; Revalski, M.; Polack, G. E., “AGN Outflows in the Narrow-Line Seyfert 1 Galaxy NGC 4051”, Talk Number 426.01, 237th AAS Meeting

5. Revalski, M.; **Meena, B.**; Martinez, F.; Crenshaw, D. M.; Kraemer, S. B.; Collins, N. R.; Fischer, T. C.; Schmitt, H. R.; Polack, G. E.; Rafelski, M., “Spatially Resolved Mass Outflow Rates for Six Nearby AGN Using Photoionization Modeling”, Talk Number 436.06, 235th AAS Meeting
6. Crenshaw, D. M.; Gnilka, C. L.; Fischer, T. C.; Revalski, M.; **Meena, B.**; Martinez, F.; Polack, G. E.; Machuca, C.; Dashtamirova, D.; Kraemer, S. B.; Schmitt, H. R., “Feeding and Feedback on Nuclear and Galactic Scales in the Seyfert 2 Galaxy Mrk 3”, Talk Number 381.05, 235th AAS Meeting
7. Crenshaw, D. M.; Fischer, T. C.; Gnilka, C. L.; Revalski, M.; Martinez, F.; **Meena, B.**; Kraemer, S.B.; Schmitt, H. R., ”Determining the Kinematics of Ionized and Molecular Gas in Nearby Active Galaxies with the Gemini Near Infrared Field Spectrometer (NIFS)”, Talk Number 306.04, 233rd AAS Meeting
8. **Meena, B.**; He X., “Study of Atmospheric Temperature Variations with Cosmic Ray (CR) Flux Measurements”, 4th Annual Meeting of the APS Southeastern Section, 62,12

Conference Posters

1. Polack, G. E.; Crenshaw, D. M.; **Meena, B.**; Revalski; M., “Interactions of AGN Outflow and Star-Forming Regions in Nearby Seyfert Galaxies”, iPoster Number 138.12, 237th AAS Meeting
2. **Meena, B.**; Crenshaw, D. M.; Fischer, T. C.; Schmitt, H. R.; Revalski; M.; Polack, G. E., “Identifying the Extent of AGN Outflows using Spatially Resolved Gas Kinematics”, Poster Number 304.17, International Astronomical Union (IAU) Symposium - 359, GALFEED
3. **Meena, B.**; Crenshaw, D. M.; Fischer, T. C.; Schmitt, H. R.; Revalski, M.; Polack, G. E., “Measuring the Extents of AGN Outflows using Spatially Resolved Spectroscopy”, Poster Number 304.17, 235th AAS Meeting
4. Polack, G. E.; Crenshaw, D. M.; **Meena, B.**; Revalski, M.; Martinez, F.; Fischer, T. C., “Ionization Mechanisms in Nearby Active Galaxies”, Poster Number 304.11, 235th AAS Meeting
5. **Meena, B.**; Crenshaw, D. M.; Revalski, M.; Gnilka, C. L.; Martinez, F.; Fischer, T. C., “Probing the Narrow Line Region Kinematics of the Seyfert 2 Galaxy Mrk 78 using Apache Point Observatory (APO) and Hubble Space Telescope (HST) Observations”, Poster Number 242.12, 233rd AAS Meeting
6. Martinez, F.; Crenshaw, D. M.; Revalski, M.; Gnilka, C. L.; Dashtamirova, D.; Fischer, T. C., **Meena, B.**, “Kinematic Study of Outflowing Gas for the Nearby Seyfert Galaxies NGC 1068 & NGC 4151 using Hubble Space Telescope and Apache Point Observatory Spectra”, Poster Number 242.11, 233rd AAS Meeting

Invited Talks and Presentations

1. “Tracing the Temporal Variations of Effective Temperature in Earth’s Upper Atmosphere with Cosmic Ray Measurements”, Inaugural International Workshop on Cosmic Ray Applications, Atlanta, GA, Oct, 2019
2. “Probing the Ionized Gas Kinematics of the Active Galaxy Mrk 78”, Physics Graduate Student (PGSA) Conference, Georgia State University, Jan 2019
3. “Statistical Modeling for Effective Temperature using Cosmic Ray data”, Women in STEM conference, Georgia State University, Apr 2018
4. “Cosmic Ray Measurements and Associate Applications”, Sarajlic O., **Meena, B.**; Syed S.; Butler C.; He X., Discover day, Mar 2017
5. “Introduction to the Background Radiation and Applications”, **Meena, B.**; Sarajlic O.; He X.; Discovery day at GSU, Atlanta Science Festival, Mar 2017