

Manasvita Joshi

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Research Interests	Particle acceleration scenarios in astrophysical plasmas, AGNs, relativistic outflows, UHECRs, EGRB, compact object physics, X-ray binaries	
Education	Ohio University , Athens, Ohio, USA Ph.D., Physics, 09/2002–11/2008, GPA 3.9/4.0 <ul style="list-style-type: none">• Dissertation Topic: “Spectral Variability Studies and Acceleration Scenarios in Jets of Blazars”• Advisor: Markus Böttcher Indian Institute of Technology (IIT) , Delhi, India M.Sc., Physics, 08/2000–06/2002 Delhi University , Delhi, India B.Sc., Physics, 07/1997–06/2000	
Positions Held	Part-time Lecturer + Research Scholar Department of Astronomy, Boston University, Boston, MA	September 2014–present
	Senior Postdoctoral Associate Department of Astronomy, Boston University, Boston, MA	August 2012–August 2014
	Visiting Research Scholar Department of Astronomy, Boston University, Boston, MA	December 2011–July 2012
	Postdoctoral Research Associate Department of Astronomy, Boston University, Boston, MA	September 2009–November 2011
	Research Assistant Department of Physics and Astronomy, Ohio University, Athens, OH	September 2007–June 2009
	Teaching Assistant Department of Physics and Astronomy, Ohio University, Athens, OH	September 2002–July 2007
Research Awards	<ul style="list-style-type: none">• NASA - The Fermi Gamma-ray Space Telescope Cycle 5 Guest Investigator Program, Principal Investigator (PI), Awarded \$200,000 <i>Tracking The Evolution Of Multi-Waveband Outbursts Of Fermi Blazars</i>• NASA - The Fermi Gamma-ray Space Telescope Cycle 5 Guest Investigator Program, Co-Investigator (CoI), Awarded \$99,998	September 2012 - August 2014 December 2012 - November 2013

*Multi-Frequency Campaigns To Study Rapid Variability
In Gamma-Ray Blazars*

- **NASA - The Fermi Gamma-ray Space Telescope**
Cycle 3 Guest Investigator Program, September 2010 - August 2011
PI, Awarded \$100,000
*Theoretical Study Of The Effects Of Magnetic Field
Geometry On The Gamma-ray Emission Of Blazars*
- **NASA - The Fermi Gamma-ray Space Telescope**
Cycle 3 Guest Investigator Program, November 2010 - October 2011
CoI, Awarded \$99,962
Searching For The Site Of Gamma-ray Emission In Blazar Jets

**Research
Experience**

- Investigation of the effects of the orientation of the magnetic field on the spectral energy distribution and spectral variability patterns of blazars. October 2013 - present
- Investigation of the effects of accretion disk, broad line region, and dusty torus on the high-energy emission of blazars and the implications on the location of Gamma-ray emitting region in jets of blazars. February 2011 - Sept 2013
- Multiwavelength spectral analysis of blazars using Fermi, Swift, RXTE, VLBA, and ground-based optical telescopes including reduction of data obtained from Fermi and Swift. October 2009 - present
- Polarimetric and photometric observations of blazars at Lowell observatory, Flagstaff, Arizona, including reduction of data obtained from those observing runs. October 2009 - May 2013
- Worked on GeV/TeV acceleration of electrons due to radiation fields for the project "Plasma in nanodimensions" as a visiting research scientist at IIT, Delhi, India. February - March 2009
- Theoretical investigations of time-dependent radiation transfer in relativistic jets using internal shock model. This included taking into account the inhomogeneity in the photon density throughout the accelerated (emission) region, **semi-analytically calculating the average photon escape timescale for a cylindrical emission region**, and numerically obtaining a simplified expression for the synchrotron power from a power-law distribution of electrons. January 2007 - October 2010
- In-depth theoretical analysis of the observed spectral energy distribution and spectral variability patterns of the BL Lac object 3C 66A obtained from an international multiwavelength campaign in 2003/2004. The analysis predicted that the object is well within the sensitivity limit of MAGIC, Fermi, and VERITAS if inverse Comptonization of photons external to the jet is significant. **This prediction came true when 3C 66A was observed by VERITAS in an active state emitting > 100 GeV photons** (Swordy et al., 2008, ATel #1753). June 2004 - October 2006
- 6 one-week observing runs to monitor blazars and optical afterglows of GRBs at the Kitt Peak MDM observatory. Contributed to the primary data reduction from those runs. April 2005 - April 2008

Teaching Experience

- Part-time lecturer for the undergraduate course CC105: Evolution of the Physical Universe and of the Earth Boston University
- Mentored a high-school intern under the Authentic Research Program (ARP) on data fitting, linux commands, and modeling blazar jet emission (~ 6 weeks). Boston University
- Mentored a graduate student for his thesis research project on blazar jet emission (~ 1 year). Boston University
- Guided and taught a graduate student data reduction for her summer research project (~ 2 months). Boston University
- Significant effort in the supervision of two undergraduate students for their research project in astrophysics (~ 2 months). Ohio University
- Lab instructor and recitation sessions for various undergraduate classes Ohio University
 - Physics 250 Series: General Physics, calculus based (Classical mechanics, Thermodynamics, and Electricity & Magnetism)
 - Physics 200 Series: Introductory Physics, algebra based (Classical mechanics, Thermodynamics and Electricity & Magnetism)
 - Astro 100: General Introduction to Astronomy (sun, stars and galaxies, interstellar matter, blackholes, “Big Bang” theory, evolution of the universe)
- Conducted undergraduate student help sessions and graded physics and astronomy undergraduate courses for Physics 250 & 200 series and Astro 100. Ohio University
- Substitute lecturing for a Physics 251 (Classical mechanics) and Astro 100 (sun) class. Ohio University
- Grading of graduate level Quantum mechanics for a class of 10 students. Ohio University

Computer Skills

- Expert knowledge of C/C++, familiar with Fortran90
- Experienced with parallel programming using openMP.
- Experienced with Unix/Linux operating systems
- Advanced knowledge of IRAF, familiar with Mathematica
- Proficient in Windows XP and its related applications
- Well-versed in using Microsoft Power Point, Excel, and Word
- Experienced with \LaTeX and HTML

Language Skills

- Native language: Hindi
- Fluent in English

- Other Awards and Grants**
- **Second Place Honors for an Outstanding Presentation** at the Student and Creative Activity Fair, Ohio University Spring 2006
 - **Ohio University Travel Grant** (financial support to attend the International School of Cosmic Ray Astrophysics, Erice, Sicily, June 2006) Spring 2006
 - **Outstanding Teaching Assistant Award**, College of Arts and Sciences, Ohio University Spring 2003

- Professional Membership**
- American Astronomical Society (AAS)
 - AAS High-Energy Astronomy Division (HEAD)

- Academic, Professional Service**
- Member of the **NASA Fermi Gamma-ray Space Telescope Proposal Review Panel** in 2013.
 - **Referee** for international journal papers and letters: **Astrophysical Journal (ApJ)**, **Monthly Notices of the Royal Astronomical Society (MNRAS)**, **Astronomy and Astrophysics (A&A)**, **Publications of the Astronomical Society of Japan (PASJ)**, **Research in Astronomy and Astrophysics (RAA)**, **Journal of Astrophysics and Astronomy (JOAA)**.
 - Participated in the Navajo-hopi school field trip programs for educating students in astronomy at **Lowell Observatory**, Flagstaff, AZ, in 2011 and 2013
 - Judge for **Chambliss Astronomy Achievement Student Award** for the 215th AAS meeting, Washington D.C., in 2010.
 - Assisted in Teacher Professional Development Program, through the Building Exemplary Elementary Foundation in Science Program at Ohio University in 2007.
 - Judge for various district and state science fairs in 2003, 2004 and 2006.
 - Active participation in the public outreach programs organized by the Astrophysical Institute (ApI), Ohio University, from 2003 till 2008.
 - Participated in “Women In Science” day organized by Department of Physics and Astronomy, Ohio University, 2006.
 - Assisted with the Ohio University Physics and Astronomy Open House in 2005 and 2007.
 - Webmaster of Women In PPhysics and Astronomy (WIPHA), Ohio University, from 2005 till 2008.

- Presentations & Workshops**
- Review Articles**
- “Modeling The Multiwavelength Spectra And Variability Of 3C 66A In 2003-2004”, **Joshi, M. & Böttcher, M.**, 2007, International Journal of Modern Physics A, 22, 19

Invited Talks: Colloquia & Seminars

- Boston University, Institute for Astrophysical Research (IAR), Journal Club Talk Sept 2013
- Harvard University, Institute for Theory and Computation (ITC), Group Lunch Talk May 2013

- Harvard University, Center for Astrophysics (CfA), Quasar Tea Talk May 2012
- Harvard University, Center for Astrophysics (CfA), High Energy Astrophysics Lunch Talk January 2012
- Boston University, Institute for Astrophysical Research, Colloquium, April 2011
- Brown University, Physics Department, Astronomy Journal Club March 2011
- IIT, Delhi, Physics Department, Plasma Physics Seminar (weekly) February – March 2009
- IIT, Delhi, Physics Department, Colloquium February 2006

Conferences & Meetings

- “The 2014 New England Regional Quasar and AGN Meeting”, Harvard University, Cambridge, **contributed talk** May 2014
- “The Innermost Regions of Relativistic Jets and Their Magnetic fields”, Granada, Spain, **contributed talk** June 2013
- “Fourth International Fermi Symposium”, Hyatt Regency, Monterey, California, contributed poster October 2012
- “39th COSPAR Scientific Assembly”, Mysore, India, **contributed talk** July 2012
- “The 2012 New England Regional Quasar and AGN Meeting”, MIT, Cambridge, **contributed talk** May 2012
- “Fermi and Jansky: Our Evolving Understanding of AGN”, St. Michaels, MD, contributed poster November 2011
- “Time Domain Astrophysics with Swift”, Clemson, SC, contributed poster October 2011
- “HEAD 2011 Meeting”, Newport, RI, contributed poster September 2011
- “2011 Fermi Symposium”, University of Rome La Sapienza, Rome, Italy, contributed poster May 2011
- “The 2010 New England Regional Quasar and AGN Meeting”, Boston University, Boston, **contributed talk** May 2010
- “215th AAS Meeting”, Washington Marriott, Washington D.C., **contributed talk** January 2010
- “2009 Fermi Symposium”, Hyatt Regency Washington, Capitol Hill, D.C, contributed poster November 2009
- “Radio Galaxies in the Chandra Era”, Harvard University, Cambridge, MA, contributed poster July 2008
- “211th AAS Meeting”, Austin, Texas, **dissertation talk**, January 2008
- “The First GLAST Symposium”, Stanford University, contributed poster February 2007
- “Blazar Variability Workshop II: Entering the GLAST Era”, Florida International University, **contributed talk** April 2005
- “Extragalactic Astrophysics and the New Era of High-Energy Astronomy”, Ohio Section of APS, Spring Meeting, Athens, OH, contributed poster April 2004

Summer School

- “15th Course of International School of Cosmic Ray Astrophysics - Astrophysics at Ultra-High Energies, Erice, Italy, **contributed talk** June 2006