

# Manasvita Joshi

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CONTACT INFORMATION	Boston University Department of Astronomy 725 Commonwealth Avenue Boston, MA 02215	phone: (617) 358-6121 fax: (617) 353-5704 email: mjoshi@bu.edu <a href="http://www.manasvita.com">http://www.manasvita.com</a>
RESEARCH INTERESTS	Particle acceleration scenarios in astrophysical plasmas, AGNs, relativistic outflows, UHECRs, EGRB, compact object physics	
EDUCATION	<b>Ohio University</b> , Athens, Ohio, USA Ph.D., Physics, 09/2002–11/2008, GPA 3.9/4.0 <ul style="list-style-type: none"><li>• Dissertation Topic: “Spectral Variability Studies and Acceleration Scenarios in Jets of Blazars”</li><li>• Advisor: Markus Böttcher</li></ul> <b>Indian Institute of Technology (IIT)</b> , Delhi, India M.Sc., Physics, 08/2000–06/2002 <b>Delhi University</b> , Delhi, India B.Sc., Physics, 07/1997–06/2000	
POSITIONS HELD	<b>Research Associate</b> Department of Astronomy, Boston University, Boston, MA	September 2009–present
	<b>Visiting Research Scholar</b> Department of Astronomy, Boston University, Boston, MA	June–August 2009
	<b>Research Assistant</b> Department of Physics and Astronomy, Ohio University, Athens, OH	September 2007–February 2009
	<b>Teaching Assistant</b> Department of Physics and Astronomy, Ohio University, Athens, OH	September 2002–July 2007
RESEARCH EXPERIENCE	<ul style="list-style-type: none"><li>• Multiwavelength spectral analysis of blazars using Fermi, Swift, RXTE, VLBA, and ground-based optical telescopes. <i>October 2009–present</i></li><li>• 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. <i>February–March 2009</i></li><li>• Simulated the observed spectral energy distribution of the radio-loud quasar 3C 279. The goal of the project is to understand the dominant mode of acceleration mechanism and the interplay of various radiative processes responsible for producing the observed spectrum from its inner jet. <i>October 2008–present</i></li><li>• Performed theoretical investigations of particle acceleration and 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, <b>semi-analytically calculating the average photon escape timescale for a cylindrical emission region</b>, and numerically obtaining a simplified expression for the synchrotron power from a power-law distribution of electrons. <i>January 2007–October 2008</i></li></ul>	

- Carried out an 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 recently 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*
- Contributed to the initial data collection of 3C 66A, from the campaign, that involved combining disparate optical data sets and putting them on a common photometric scale, and estimating key physical properties of the source using fundamental physical arguments. *December 2003–June 2004*
- Conducted and participated in 6 one-week observing runs to monitor blazars and optical afterglows of GRBs at the Kitt Peak MDM observatory. Contributed to the primary reduction of data from those runs. *April 2005–April 2008*
- Designed and completed master’s project on “Fabrication, characterization, and design of single-mode fiber tapers as wavelength filters” at IIT, Delhi, India. *January–May 2002*
- Carried out a “Study of plasma synthesized Magnesium Oxide” for bachelor’s project at the Institute of Plasma Research, Gujarat, India. *May–July 1999*

#### RESEARCH GRANTS

- Fermi Cycle 3 Guest Investigator Program September 2010 - present

#### TEACHING EXPERIENCE

- Significant effort in the supervision of two undergraduate students Ohio University  
for their research project in astrophysics (~ 2 months).
- 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 Ohio University  
and astronomy undergraduate courses for Physics 250 & 200 series and  
Astro 100.
- Substitute lecturing for a Physics 251 (Classical mechanics) and Astro 100 Ohio University  
(sun) class.
- 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 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 L<sup>A</sup>T<sub>E</sub>X and HTML

#### LANGUAGE SKILLS

- Native language: Hindi
- Fluent in English

#### AWARDS AND GRANTS

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

#### ACADEMIC, PROFESSIONAL SERVICE

- Peer-reviewed journal paper for Astronomy and Astrophysics (A&A) in 2007.
- 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 PHysics and Astronomy (WIPHA), Ohio University, from 2005 till 2008.

#### PROFESSIONAL MEMBERSHIP

- American Astronomical Society (AAS)
- AAS High-Energy Astronomy Division
- The Ohio Academy of Sciences

#### COMMUNITY INVOLVMENT

- Actively involved in the ongoing efforts to increase the pedestrian safety in the city of Athens, Ohio 2007
- Helped raising funds for digging wells in drought affected areas of India and buying chair lifts for the physically handicapped people of Athens, Ohio 2005
- Helped raising 25,000 USD for “Athens Public Library Expansion Project” at Athens, Ohio 2004
- Helped, as a voice-over artist, in the production of a documentary about girls in a rural village of India and their growing awareness of literacy due to a radio program called Taru, Ohio University 2004
- Active cultural participation in the annual Indian Student Association (ISA) program, Ohio University 2005

PRESENTATIONS,  
WORKSHOPS

**Colloquia & Seminars**

- IIT, Delhi, Physics Department,  
Plasma Physics Seminar (weekly) February – March 2009
- IIT, Delhi, Physics Department,  
Colloquium February 2006
- Ohio University, Athens, OH, Astrophysics Seminar (quarterly) January 2003 – 2008

**Conferences**

- “AAS 215th Meeting”, 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
- “AAS 211th 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