

CURRICULUM VITAE
NITYA KALLIVAYALIL

MIT Kavli Institute for Astrophysics and Space Research
70 Vassar Street, 37-664H
Cambridge, MA 02139
- USA -

email : nitya@mit.edu
Tel : +1 (617) 253 3429

EMPLOYMENT

Sept 2007 – present Pappalardo Fellow, **MIT Department of Physics**

EDUCATION

2007 Ph.D., Astronomy, **Harvard University**
Thesis: *The Motions of the Magellanic Clouds and the Nature of Galactic Dark Matter*
Advisor: Charles Alcock

2003 MS Physics, **University of Pennsylvania**

1997 - 2001 BA Physics, *summa cum laude*, **Mount Holyoke College**, South Hadley MA

1995 - 1997 IB (International Baccalaureate) at **United World College of the Atlantic, UK**

RESEARCH INTERESTS

Local Group galaxies and galactic dynamics; phase-space structure of dark matter and direct detection experiments; gravitational lensing; Galactic structure.

HONORS AND AWARDS

- Edward L. Fireman Fellowship Prize, Harvard University, June 2007.
- AAS press release, “*Magellanic Clouds May Just be Passing Through*”, Seattle, WA, January 2007; featured in Science News, USA Today, BBC News, Space.com, MSNBC, NewScientist, news@nature.com & Smithsonian Magazine.
- Nature Research Highlights, “*Drifting Clouds*”, March 2 2006.
- AAS press release, “*Spitzer Space Telescope begins to Solve 10-year-old Dark Matter Mystery*”, Denver, CO, July 2004.
- Sarah Williston Prize, Mount Holyoke College, 2001.
- Rusk Prize for Physics, Mount Holyoke College, 2000.

- Elected to Sigma Xi honorary society, 2000.
- Elected to Sigma Pi Sigma honorary society for physics, 2000.
- Full Scholarship (£24,000 – UK Sterling) to the United World College of the Atlantic, UK, (1995-1997).

TEACHING EXPERIENCE

2004 Spring Teaching Assistant, Phys 514 - “Mechanics, Fluids, Chaos”
 2003 Spring Teaching Assistant, Astr 001 - “Survey of the Universe”
 2001 – 2002 Teaching Assistant, Phys 101 - “Classical Physics”

RESEARCH GRANTS

- HST/Cycle16 (**PI**, \$29,275): “*Systemic and Internal Motions of the Magellanic Clouds: Third Epoch Images.*”
- HST/Cycle 15 (co-I, \$79,126): “*Solving the microlensing puzzle: An HST high-resolution imaging approach.*”
- Spitzer/Cycle 2 (co-I, \$20,573): “*Spitzer Follow-Up of MACHO LMC Microlensing Events.*”
- HST/Cycle 13 (co-I, \$67,490): “*Systemic Proper Motions of the Magellanic Clouds from Astrometry with ACS.*”

OBSERVING EXPERIENCE

- HST/Cycle 16 (40 orbits): “*Systemic and Internal Motions of the Magellanic Clouds: Third Epoch Images.*”
- HST/Cycle 15 (20 orbits): “*Solving the microlensing puzzle: An HST high-resolution imaging approach.*”
- Magellan 6.5m/PANIC (**PI**, 4 nights, Jan 2006): “*How PANIC can Resolve the Nature of Two MACHO Lenses.*”
- Spitzer/Cycle 2 (10 orbits): “*Spitzer Follow-Up of MACHO LMC Microlensing Events.*”
- Spitzer/GTO (5 orbits): Follow-up of Microlensing Events 1, 4, 5, 7 & 21.
- Spitzer/GTO (3 orbits): Follow-up of Microlensing Events 6, 14 & 25.
- HST/Cycle 13 (26 orbits): “*Systemic Proper Motions of the Magellanic Clouds from Astrometry with ACS.*”

PUBLICATIONS

7. “Are the Magellanic Clouds on their First Passage About the Milky Way?”, Gurtina Besla, **Nitya Kallivayalil**, Lars Hernquist, Brant Robertson, TJ Cox, Roeland P. van der Marel, Charles Alcock, 2007, ApJ-accepted (astro-ph/0703196).

6. “Identification of the Microlens in Event MACHO-LMC-20”, **Nitya Kallivayalil**, Brian M. Patten, Massimo Marengo, Charles Alcock, Michael W. Werner, Giovanni G. Fazio, 2006, ApJL, 652, L97.

5. “Is the SMC Bound to the LMC? The HST Proper Motion of the SMC”, **Nitya Kallivayalil**, Roeland P. van der Marel, Charles Alcock, 2006, *ApJ*, 652, 1213.
4. “The Proper Motion of the Large Magellanic Cloud using HST”, **Nitya Kallivayalil**, Roeland P. van der Marel, Charles Alcock, Tim Axelrod, Kem H. Cook, A.J. Drake, M. Geha, 2006, *ApJ*, 638, 772.
3. “Spitzer/IRAC Observations of the Fields of Five LMC Microlensing Events”, **Nitya Kallivayalil**, Brian M. Patten, Michael W. Werner, Charles Alcock, Hien T. Nguyen, to appear in *The Spitzer Space Telescope: New Views of the Cosmos*, ed. Lee Armus, ASP Conference Series.
2. “Spitzer Space Telescope Observations of the Aftermath of Microlensing Event MACHO-LMC-5”, Hien Trong Nguyen, **Nitya Kallivayalil**, Michael Werner, Charles Alcock, Brian M. Patten, Daniel Stern, 2004, *ApJS*, 154, 266
1. “On the Effect of Electron Collisions in the Excitation of Cometary HCN.” Amy J. Lovell, **Nitya Kallivayalil**, F. Peter Schloerb, Michael R. Combi, Kenneth C. Hansen, T. I. Gombosi, 2004, *ApJ*, 613, 615

Papers in preparation

- “Revisiting the Role of M31 in the Dynamical History of the Magellanic Clouds”, **Nitya Kallivayalil** & Charles Alcock
- “HST/WFPC2 Analysis of the Profiles of the MACHO Source Objects : Stars or Galaxies?”, **Nitya Kallivayalil**, Douglas L. Welch, Charles Alcock

SCIENTIFIC TALKS

1. “The Motions of the Magellanic Clouds: New Insights into an Enigmatic System”, **Colloquium, UToronto**, October 2007
2. “Some new constraints on the orbits of the Magellanic Clouds and what they mean for the Milky Way”, Theoretical Astrophysics Division Seminar, **CfA**, February 2007
3. “The Motions of the Magellanic Clouds: Towards a Reassessment of some Fundamentals, CCPP, **NYU**, January 2007
4. “Some old and new ideas about the Magellanic Clouds and what they mean for the Milky Way”, Research Forum, **CfA**, Cambridge, November 2006
5. “Constraints on the Orbital Evolution of the Magellanic Clouds”, Wunch Talk, **Princeton University**, Princeton, November 2006
6. “The Motions of the Magellanic Clouds: Towards a Reassessment of some Fundamental Questions”, Astrophysics Seminar, **Institute for Advanced Study**, Princeton, October 2006

7. “The Motions of the Magellanic Clouds: Towards a Reassessment of some Fundamental Questions”, Lunch Talk, **Carnegie Observatories**, Pasadena, October 2006
8. “The Motions of the Magellanic Clouds about the Milky Way”, FLASH Lunch Talk, **UC Santa Cruz**, September 2006
9. “The Motions of the Magellanic Clouds about the Milky Way”, Astrophysics Seminar, **UC Santa Barbara**, September 2006
10. “The Motions of the Magellanic Clouds about the Milky Way”, Astrophysics **Colloquium**, **MIT**, September 2006
11. “The Systemic Proper Motions of the Magellanic Clouds and their Orbits around the Milky Way”, YCAA **Colloquium**, **Yale University**, May 2006
12. “Spitzer Sheds Light on Dark Matter”, Summer Talk, **CfA**, Cambridge, July 2005
13. “Spitzer Space Telescope Observations of the Aftermath of Five Microlensing Events”, New Views of the Cosmos Conference, Pasadena, November 2004
14. “Proper Motions of the Magellanic Clouds from Astrometry with ACS”, Philadelphia Area Astronomers Meeting, New Jersey, November 2003

CONFERENCES AND WORKSHOPS

- 211th American Astronomical Society Meeting, Austin, Texas, January (2008)
- “The Origin of the Galaxy and Local Group”, 37th Saas-Fee advanced course, Murren, Switzerland, March (2007)
- 209th American Astronomical Society Meeting, Seattle, WA, January (2007)
- “Applications of Gravitational Lensing”, KITP, Santa Barbara, California, October (2006)
- Yale Astrometry Workshop, Yale University, New Haven, Connecticut, July (2005)
- 205th American Astronomical Society Meeting, San Diego, California, January (2005)
- “Spitzer Space Telescope: New Views of the Cosmos”, Pasadena, November (2004)
- 204th American Astronomical Society Meeting, Denver, Colorado, June (2004)
- Philadelphia Area Astronomers Meeting, New Jersey (2003)
- Organizer of astrophysics Journal Club at University of Pennsylvania (2003 – 2004).

Professional Activities & Affiliations: member of American Astronomical Society; referee for A&A; reviewer for NSF proposals.