

# Karen L. Masters

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## CONTACT INFORMATION

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## EDUCATION

**Cornell University**, Ithaca, NY, USA

Ph.D. Astronomy, August 2005  
- "Galaxy flows in and around the Local Supercluster", Adviser: Martha Haynes  
M.S. Astronomy, January 2003

**Oxford University**, Oxford, United Kingdom

B.A. Physics (1st Class Honours), June 2000

## RESEARCH EXPERIENCE

**Harvard-SAO Center for Astrophysics:** (with John Huchra and collaborators)  
Postdoctoral researcher

**2005-present**

- *The 2MASS Redshift and Peculiar Velocity Surveys*

**Cornell University:** (Supervisors - Martha Haynes and Riccardo Giovanelli)

Graduate Research Assistant

**2003-2005**

Graduate Research Projects:

**2000-2005**

- *Construction of the SFI++ Sample of Tully-Fisher Distances*
- *Construction of Mock Catalogs for the SFI++ Sample*
- *Parametric modeling of the velocity field of the Local Supercluster*
- *HI Drift Surveys at Arecibo and the GBT (simulations of expected results, and observations)*
- *Observations of multi-wavelength rotation curves for intermediate redshift galaxies*
- *The Impact of Distance Uncertainties on Local Luminosity and Mass Functions*  
(A study of the impact of ignoring peculiar velocities in deriving distances for catalogs)
- *Internal Extinction in Spiral Galaxies in the NIR from 2MASS data.*

**Birmingham University, UK:** (Supervisor - Duncan Forbes)

Summer Research Student

**Summer 1999**

- *Predicting the Merger of the Local Group using Globular Cluster Populations*

## OBSERVING EXPERIENCE

*Radio:* 21cm observations of galaxies: 381 hours at GBT (much done remotely); 80 hours at Parkes; Arecibo and GBT drift scan observations.

*Optical Spectroscopy:* 22 nights (including 5 as lead observer) with Double Spectrograph on Hale 5m, Palomar Observatory. 2 nights using LDSS-3 on Magellan.

*Optical Imaging:* 6 nights WIYN 0.9m with MOSAIC, 1 night on WIYN 3.5m with Mini-Mo, KPNO.

## HONORS AND AWARDS

- Cornell Graduate Student Conference Travel Grant, 2002, 2003, 2004.
- AAS Young Astronomer Travel Grant to attend IAU 2003, Sydney, Australia, July 2003
- Eleanor Norton York Prize in Astronomy for Graduate Students, Cornell Astronomy Dept. 2002.
- Cornell University Graduate Student Fellow 2000-2001.
- Scott Prize for best performance in B.A. Physics Examinations, Oxford University, 2000.
- Wadham College Scholar, Oxford University, 1998-2000

## SUMMER SCHOOLS

- National Virtual Observatory Summer School, Aspen, Colorado, September 2004
- Eighth Synthesis Imaging Summer School at the VLA, Socorro, New Mexico, June 2002
- NAIC-NRAO Summer School on Single Dish Radio Astronomy, Arecibo, Puerto Rico, June 2001

TEACHING EXPERIENCE	<p><i>Undergraduate Research Supervisor</i> <b>2006-present, CfA</b> Developed research project and supervised undergraduate student, Nicholas Reshetnikov.</p> <p><i>Summer Student Supervisor</i> <b>Summer 2006, CfA</b> Supervised undergraduate summer student Ferah Munshi (sophomore from Berkeley). She won the 2007 Chambliss Astronomy Achievement Student Award at the Jan 2007 AAS for her poster describing this work.</p> <p><i>Guest Lecturer</i> <b>Autumn 2006, Wheelock College</b> Guest lecturer for 2 classes on galaxies and cosmology. Wheelock College is a small undergraduate college in Boston which focuses on preparing students to go on to become teachers and educators.</p> <p><i>Teaching Assistant Astro 102</i> <b>2003, Cornell University</b> Introductory Planetary Astronomy for non-majors. Taught sections, assigned and graded homework.</p> <p><i>Teaching Assistant Writing in the Majors</i> <b>2001-2002, Cornell University</b> Writing in the Majors courses for non-majors, and Sophomores entering the Astronomy major. My duties included development of assignments, grading of papers and office hours. One of my Astro 233 students won the university wide Knight Prize for Writing for her final assignment.</p>
PUBLIC OUTREACH ACTIVITIES	<p><i>Project ASTRO, Boston</i> <b>2006-2007</b> Co-planned and taught 8th Grade Astronomy Enrichment Seminar with Mrs. Longsley-Cook (8th grade Earth Sciences Teacher), Wilson Middle School, Natick, MA.</p> <p><i>Science Education Seminar, Center for Astrophysics</i> <b>2005-present</b> Regular attendee of weekly seminar discussions.</p> <p><i>Curious About Astronomy? Ask an Astronomer</i> <b>2000-present</b> (<a href="http://curious.astro.cornell.edu">http://curious.astro.cornell.edu</a>). Answer questions from the general public. Website development and maintenance (both content and structure).</p> <p><i>Expanding Your Horizons in Science, Math and Engineering at Cornell</i> <b>Spring 2002-2005</b> EYH brings two hundred 7th-9th Grade Girls to Cornell for a day of workshop in all areas of science, math and engineering. EYH works on an operating budget of close to \$20,000 providing logistical support for the workshops all over the Cornell Campus. I was Conference Co-Chair (with overall responsibility) in 2004, 2005. I developed and ran workshop on Galaxies in 2002, 2003.</p> <p><i>Public Stargazing Nights, Cornell Adult University</i> <b>Summer 2002-2005</b> Planned and hosted public stargazing nights at the historic 12 inch refractor on the Cornell Campus.</p> <p><i>Focus for Teens Astronomy Program</i> <b>Summer 2001-2005</b> Developed and ran various workshops in Astronomy for this 4H affiliated program ran at Cornell.</p> <p><i>Graduate Student Schools Outreach Program</i> <b>Spring 2004</b> Developed and taught six session mini-course entitled <i>Getting to Know the Sky</i> for Ms. Snow's 2nd Grade class at R.C. Buckley Elementary School, Lansing, NY.</p> <p><i>Graduate Student Chaperone CONTOUR Comet Challenge</i> <b>Summer 2002</b> Participated in preliminary judging for this national competition run by NASA, and accompanied winners (two middle school and two high school students and their teachers) to the launch of the CONTOUR Spacecraft.</p>
PROFESSIONAL ORGANIZATIONS AND ACTIVITIES	<ul style="list-style-type: none"> <li>• Referee for AJ, PASP, MNRAS</li> <li>• NRAO Users Committee, 2007-present</li> <li>• Member American Astronomical Society 2001-present</li> <li>• Member Royal Astronomical Society 2001-present</li> </ul>

- 2008 13. *2MTF I: The Tully-Fisher Relation in the 2MASS J, H and K-bands*, **K.L. Masters**, C. M. Springob & J. P. Huchra. 2008, AJ 135, 1738 (1 ADS citation).
12. *Geometric Tests of Cosmological Models: III. The Cosmology-Evolution Diagram at  $z=1$* , C. Marinoni, A. Saintonge, T. Contini, C.J. Walcher, R. Giovanelli, M.P. Haynes, **K.L. Masters**, O. Ilbert, A. Iovino, V. Le Brun, O. Le Fevre, A. Mazure, L. Tresse, J.-M. Virey, S. Bardelli, D. Bottini, B. Gatilli, G. Guzzo, D. Maccagni, J.P. Picat, R. Scaramella, M. Scodreggio, P. Taxil, G. Vettolani, A. Zanichelli & E. Zucca. 2008, A&A 478, 71 (2 ADS citations).
11. *Geometric Tests of Cosmological Models: II. Calibration of Rotational Widths and the Tully-Fisher Relation*, A. Saintonge, **K.L. Masters**, C. Marinoni, K. Spekkens, R. Giovanelli, & M.P. Haynes. 2007, A&A 478, 57 (3 ADS citations).
10. *Geometric Tests of Cosmological Models: I. Probing Dark Energy Using the Kinematics of High Redshift Galaxies*, C. Marinoni, A. Saintonge, R. Giovanelli, M.P. Haynes, & **K.L. Masters**, O. Le Fevre, A. Mazure, P. Taxil & J.-M. Virey. 2008, A&A 478, 43 (2 ADS citations).
- 2007 9. *SFI++ II: A New I-band Tully-Fisher Catalog, Derivation of Peculiar Velocities and Dataset Properties*, C.M. Springob, **K.L. Masters**, M.P. Haynes, R. Giovanelli & C. Marinoni. 2007, ApJS 172, 599 (8 ADS citations).
8. *Groups of Galaxies in the Two Micron All-Sky Redshift Survey*, A.C. Crook, J.P. Huchra, N. Martimbeau, **K.L. Masters**, T. Jarrett & L.M. Macri. 2007, ApJ 655, 790 (1 ADS citation).
7. *The Arecibo Legacy Fast ALFA Survey III: HI Source Catalog of the Northern Virgo Cluster Region*, R. Giovanelli, M.P. Haynes, B.R. Kent, A. Saintonge, S. Stierwalt, A. Altaf, T. Balonek, N. Brosch, S. Brown, B. Catinella, A. Furniss, J. Goldstein, G. L. Hoffman, R. A. Koopmann, D. A. Kornreich, B. Mahmood, A. M. Martin, **K. L. Masters**, A. Mitschang, E. Momjian, P. H. Nair, J. L. Rosenberg, B. Walsh. 2007, AJ 133, 2569 (22 ADS citations).
- 2006 6. *SFI++ I: A New I-band Tully-Fisher Template, the Cluster Peculiar Velocity Dispersion and  $H_0$* , **K.L. Masters**, C.M. Springob, M.P. Haynes & R. Giovanelli. 2006, ApJ 653, 861 (20 ADS citations).
- 2005 5. *The Arecibo Legacy Fast ALFA Survey II: Results of Precursor Observations*, R. Giovanelli, M.P. Haynes, B.R. Kent, P. Perillat, B. Catinella, G.L. Hoffman, E. Momjian, J. Rosenberg, A. Saintonge, K. Spekkens, N. Brosch, **K.L. Masters**, C.M. Springob, I.D. Karachentsev, V.E. Karachentseva, R.A. Koopmann, E. Muller, W. van Driel, & L. van Zee. 2005, AJ 130, 2598 (14 ADS citations).
4. *The Arecibo Legacy Fast ALFA Survey I: Science Goals, Survey Design and Strategy*, R. Giovanelli, M.P. Haynes, B.R. Kent, P. Perillat, A. Saintonge, N. Brosch, B. Catinella, G.L. Hoffman, S. Stierwalt, K. Spekkens, M. Lerner, **K.L. Masters**, E. Momjian, J. Rosenberg, C.M. Springob, plus 25 others, 2005, AJ 130 2613 (36 ADS citations).
- 2004 3. *The Impact of Distance Uncertainties on Local Luminosity and Mass Functions*, **K.L. Masters**, M.P. Haynes and R. Giovanelli, 2004, ApJ 607, L115 (11 ADS citations).
- 2003 2. *Internal Extinction in Spiral Galaxies in the Near-Infrared.*, **K.L. Masters**, R. Giovanelli, and M.P. Haynes, 2003, AJ 126, 158 (31 ADS citations).
- 2000 1. *The Elliptical Galaxy Formerly Known as the Local Group: merging the globular cluster systems.*, D.A. Forbes, **K.L. Masters**, D. Minniti, and P. Barmby, 2000, A&A 358, 471 (26 ADS citations).

CONFERENCE  
PROCEEDINGS

- *The Local Velocity Field*. **K.L. Masters**, AIP Conf. Proc. , “The Evolution of Galaxies through the Neutral Hydrogen Window”, eds. A. Momjian, R. Minchin. Febuary 1-3 2008, Arecibo, (astro-ph/0803.3929).
- *Mapping Mass in the Local Universe*. **K.L. Masters**, APS Conf. Proc., “Frontiers of Astrophysics, A Celebration of NRAO 50th Anniversary Science Symposium”, eds. A. Bridle, J. Condon, G. Hunt, June 18-21 2007, Charlottesville (astro-ph/0708.2913).
- *Multi-Wavelength Study of Galaxy Rotation Curves and its Application to Cosmology*. A. Sain- tonge, C. Marinoni, **K.L. Masters**, R. Giovanelli, M.P. Haynes & T. Contini. Proceedings of The Fabulous Density of Galaxies: Bridging Past and Present. Vth Marseille International Cosmology Conference, June 2005 (astro-ph/0510363).
- *Cosmology in the Very Local Universe: Why Flow Models Matter*. **K.L. Masters**, Proc. of 22nd Texas Symposium of Relativistic Astrophysics at Stanford, Dec 2004. eds. P. Chen, E. Bloom, G. Madejski & V. Petrosian (astro-ph/0503271).

CONFERENCES,  
WORKSHOPS,  
COLLOQUIA AND  
TALKS

- May 1st 2008: OIR Lunch Talk, CfA, Cambridge, MA
- February 1-3rd 2008: Speaker, The Evolution of Galaxies in the Neutral Hydrogen Window, Arecibo Observatory, PR
- January 27th 2008: Colloquium speaker, Haverford College, PA, USA
- January 17th 2008: Colloquium speaker, West Virginia University, Morgantown, WV, USA
- October 10th 2007: Invited speaker, 1st Annual CfA Postdoc Symposium, Cambridge, MA, USA
- June 17th-21st 2007: Invited speaker, NRAO 50th Anniversary Workshop, Charlottesville, VA, USA
- May 25th-30th 2007: Poster presentation, AAS Conference, Honolulu, HI, USA
- November 13th 2006: Lunch Talk, ATNF, Sydney, Australia
- October 13-14th 2006: Dark and Dusty Galaxies, Ithaca, NY
- June 22-24th 2006: ALFALFA Collaboration Workshop, Ithaca, NY
- September 22nd 2006: MIT Lunch Talk, MIT, Cambridge, MA, USA
- August 8th 2006: CfA Summer Colloquium speaker, CfA, Cambridge, MA, USA
- May 25th 2006: Colloquium speaker, Union College, Schenectady, NY, USA
- May 11th 2006: OIR Lunch Talk, CfA, Cambridge, MA
- February 2nd 2006: GB Observatory Lunch Talk, Green Bank, WV, USA
- January 8th-14th 2006: Poster presentation, AAS Conference, Washington, DC, USA
- April 4-8th 2005: Speaker, NAM Meeting, Birmingham, UK
- January 20th 2005: Invited speaker, Lawrence Berkeley Lab, Berkeley, CA, USA
- January 19th 2005: Lunch talk, UC Berkeley, Berkeley, CA, USA
- December 13-17th 2004: Poster presentation, Texas Symposium on Relativistic Astrophysics and Cosmology, Standford, CA, USA
- January 3-8th 2004: AAS Dissertation Talk, AAS Conference, Atlanta, GA, USA
- October 1-3rd 2003: Communicating Astronomy to the Public, Washington, DC, USA
- July 11-30th 2003: Poster presentation, IAU Meeting, Sydney, Australia
- April 7-12th 2003: Poster presentation, NAM Meeting, Dublin, Ireland