

Chun Ly

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Research Interests

Galaxies: evolution and formation, stellar mass and luminosity functions, star-formation rate indicators, mass-metallicity relations and stellar populations at high redshifts, high- z selection techniques, multi-wavelength extragalactic astronomy

Jets: High angular resolution radio imaging on sub-parsec scales, collimation and acceleration mechanisms, radio emission from galaxies

Education

University of California, Los Angeles (UCLA):

Advanced to Ph.D Candidacy (Astronomy) – 2007

Committee: Matthew A. Malkan (Advisor), James E. Larkin, Edward L. Wright, Alice E. Shapley, and An Yin

Proposed Thesis: *The Cosmic Evolution of Star-forming Galaxies over the Past Eleven Billion Years*

Expected Defense Date: June 2010

M.Sc. (Astronomy) – 2006

Advisor: Matthew A. Malkan

Thesis: *The Luminosity Function and Star Formation Rate between Redshifts of 0.07 and 1.47 for Narrowband Emitters in the Subaru Deep Field*

University of Arizona, Tucson (UofA):

B.Sc. (Astronomy and Physics) – 2004

Advisors: Michael S. Brotherton (2000-02), David S. De Young (2002-04), and Jill Bechtold (2003-04)

Professional Experience

Observatories of the Carnegie Institution of Washington:

Summer Graduate Student Researcher (2008) – Responsible for reducing and analyzing the KPNO/NEWFIRM broad- and narrow-band imaging data for the Subaru-XMM Deep Survey (SXDS) and the Cosmic Evolution Survey (COSMOS).

UCLA:

Graduate Student Researcher (2005-present) – Team member for the Subaru Deep Field (SDF) project. Responsible for reducing and analyzing the *GALEX*, *Spitzer*, KPNO/MOSAIC, and W. M. Keck data for the SDF. Identified $z < 1.6$ narrow-band emitters and $z \sim 2$ Lyman break galaxies for the field. Also expanding the SDF project with spectroscopic data from MMT/Hectospec and deep near-infrared data with KPNO/NEWFIRM.

National Radio Astronomy Observatory (NRAO), Socorro, NM:

National Science Foundation REU Summer Research Assistant (2003 and 2004) – Studied the morphology of the inner radio jet of M87 (and other radio galaxies) with the Very Long Baseline Array (VLBA) at 43 GHz. Observations marginally detected the counter-jet of M87 and when combined with proper motion measurements, constraints on the orientation and speed of the jet were obtained. Gave public tours of the Very Large Array (VLA). Work presented in NRAO-Socorro Lunch Talk Series.

National Optical Astronomy Observatory (NOAO), Tucson, AZ:

Undergraduate Student Researcher (2000-2003) – Studied the core of 3CR 68.1 for the possibility of free-free absorption. Six different radio frequencies from the VLA were reduced, and indicates that the core is intrinsically faint.

NASA Arizona Space Grant Researcher (2003-2004) – Analyzed archival *Chandra* data of radio-selected galaxies to ascertain the mechanism (e.g., inverse-Compton) for the x-ray emission. Project concluded with a publication of the x-ray emission from the radio hotspots of PKS 2152-69. Evidences point to a thermal origin from an interaction of the jet with a dense interstellar medium cloud. Work presented at Arizona Space Grant Symposium.

Teaching Experience at UCLA

Teaching Assistant: (Astr 82, Spring 2005) – Designed, taught, and led discussions for a one-hour weekly session. Lectures included the late-stage evolution of stars, classification and the properties of galaxies and active galactic nuclei (with an emphasis on their radio properties), special relativity, and experimental cosmology. Intended for second-year astronomy and/or physics majors.

Teaching Assistant: (Astr 81, Winter 2005) – Designed, taught, and led discussions for a one-hour weekly session. Lectures included coordinate systems, precession, and other astronomical concepts, and stellar interiors. Developed a lab that illustrated the stellar orbits around the Galactic Center where students were able to determine the black hole mass from published results. Intended for second-year astronomy and/or physics majors.

Teaching Assistant: (Astr 3, Fall 2004) – A general elective course intended for non-science majors. Taught weekly lab sessions, which familiarizes students with astrometric coordinates (using the UCLA Planetarium), gravity, spectroscopy, telescopes, the Sun, and the Hubble's law and sequence.

Other Experiences

Operating Systems: UNIX, SunOS, Linux (Red Hat and Fedora), Microsoft Windows

Languages: C, awk, Python, L^AT_EX, HTML

Data Reduction Applications: IRAF/PyRAF, AIPS, CIAO, IDL, MOPEX

Data Analysis Applications: SuperMONGO, SExtractor, GALAXEV (Bruzual & Charlot 2003)

Observing: Keck I (LRIS), Subaru (FOCAS), KPNO-4m (MOSAIC), MMT (Hectospec)

Miscellaneous

Scholarships, Fellowships, and Awards:

UCLA:

NASA Graduate Student Researcher Program (GSRP) Fellowship (2008-present)

Graduate Research Mentorship Award (2006-2007)

Departmental Outstanding Teaching Award (2004-2005)

Eugene V. Cota-Robles Fellowship (2004-2005)

UofA:

Galileo Circle Scholarship (2003-2004)

Fred and Ida McCormick Scholarship (2002-2003)

San Diego Astronomy Association's Lucas Scholarship (2002-2003)

Phi Eta Sigma National Honor Society (2001-2004)

Accepted Proposals (PI):

2008A – MMT (NOAO Public Access; Hectospec) – *Follow-up Spectroscopy for $z < 1.2$ Emission-line Galaxies in the Subaru Deep Field*

2008A – NOAO KPNO/4m (NEWFIRM) – *A Complete Census of $z=1-3$ Galaxies in the Subaru Deep Field*

2007A – NOAO KPNO/4m (MOSAIC) – *U-band Imaging of the Subaru Deep Field*

2004C – NRAO VLBA – *Structure of SDSS J1048+0055, a Candidate Binary Black Hole*

Professional Organizations:

American Astronomical Society (2004-present)

Department/Community Service:

UCLA:

Astronomy Division Webmaster (2005-2008)

Astronomy Division Graduate Computing Representative (2007-2008)

Undergraduate Students Mentored

Celestine Grady (2007-present)

Publications

Refereed:

1. **Ly, C.**, Malkan, M. A., Woo, J.-H., Treu, T., Kashikawa, N., Shimasaku, K., & Yoshida, M. (2008), *Astrophysical Journal*, submitted, *Lyman Break Galaxies at $z \approx 1.8 - 2.8$: GALEX/NUV Imaging of the Subaru Deep Field*
2. Nagao, T., Sasaki, S. S., Maiolino, R., Kashikawa, N., **Ly, C.**, Malkan, M. A., Motohara, K., Murayama, T., Schaerer, D., Shioya, Y., & Taniguchi, T. (2008), *Astrophysical Journal*, 680, 100, *A Photometric Survey for Ly α -[He II] Dual Emitters: Searching for Population III Stars in High-redshift Galaxies*
3. Nagao, T., Murayama T., Maiolino, R., Marconi A., Kashikawa, N., Ajiki, M., Hattori, T., **Ly, C.**, Malkan, M., Motohara, K., Ohta, K., Sasaki, S., Shioya, Y., & Taniguchi Y. (2007), *Astronomy and Astrophysics*, 468, 877, *High-redshift Ly α emitters with a large equivalent width: Properties of i-dropout galaxies with an NB921-band depression in the Subaru Deep Field*
4. **Ly, C.**, Walker, R. C., & Junor, W. (2007), *Astrophysical Journal*, 660, 200-205, *High Frequency VLBA/VLBI Imaging of M87*
5. **Ly, C.**, Malkan, M., Kashikawa, N., Shimasaku, K., Doi, M., Nagao, T., Iye, M., Kodama, T., Morokuma, T., & Motohara, K. (2007), *Astrophysical Journal*, 657, 738-759, *The Luminosity Function and Star Formation Rate Between Redshifts of 0.07 and 1.47 for Narrow-band Emitters in the Subaru Deep Field*
6. Kashikawa, N., Shimasaku, K., Malkan, M. A., Doi, M., Matsuda, Y., Ouchi, M., Taniguchi, Y., **Ly, C.**, Nagao, T., Iye, M., Motohara, K., Murayama, T., Murozono, K., Nariai, K., Ohta, K., Okamura, S., Sasaki, T., Shioya, Y., & Masayuki Umemura (2006), *Astrophysical Journal*, 648, 7, *The End of the Reionization Epoch Probed by Lyman-Alpha Emitters at $z = 6.5$ in the Subaru Deep Field*
7. Shimasaku, K., Kashikawa, N., Doi, M., **Ly, C.**, Malkan, M. A., Matsuda, Y., Ouchi, M., Hayashino, T., Iye, M., Motohara, K., Murayama, T., Nagao, T., Ohta, K., Okamura, S., Sasaki, T., Shioya, Y., & Taniguchi, Y. (2006), *Publications of the Astronomical Society of Japan*, 58, 313, *Ly α Emitters at $z=5.7$ in the Subaru Deep Field*
8. **Ly, C.**, De Young, D. S., & Bechtold, J. (2005), *Astrophysical Journal*, 618, 609, *The Discovery of Extended Thermal X-Ray Emission from PKS 2152-699: Evidence for a “Jet-Cloud” Interaction*
9. **Ly, C.**, Walker, R. C., & Wrobel, J. M. (2004), *Astronomical Journal*, 127, 119, *An Attempt to Probe the Radio Jet Collimation Regions in NGC 4278, NGC 4374 (M84), and NGC 6166*
10. Brotherton, M. S., **Ly, C.**, Wills, B. J., Laurent-Muehleisen, S. A., van Breugel, W., & Antonucci, R. R. J. (2002), *Astronomical Journal*, 124, 1943, *Multiband VLA Observations of the Faint Radio Core of 3CR 68.1*

Non-refereed:

1. Walker, R. C., **Ly, C.**, Junor, W., & Hardee, P. E., ASP Conf Series “Approaching Micro-Arcsecond Resolution with VSOP-2: Astrophysics and Technology”, (arXiv:0803.1837), *Imaging a Jet Base - Prospects with M87*
2. Walker, R. C., **Ly, C.**, Junor, W., & Hardee, P. E., ASP Conf Series “Extragalactic Jets: Theory and Observation from Radio to Gamma Ray”, eds. T. A. Rector and D. S. De Young (arXiv:0708.0428), *Progress Toward a VLBA Movie of the Jet Collimation Region in M87*
3. Cameron, P. B., Grcevich, J., Gugliucci, N., Hess, K., **Ly, C.**, Schillemat, K., Shetiya, A., Simpson, C., Stilp, A., Venkata, U. R., & Zeiger, B. (2004), ATel, 312, *Radio observations of BD +60 73 = IGR J00370+6122*

Talks and Posters:

1. Talk: *Lyman Break Galaxies at $z \approx 1.8 - 2.8$: A GALEX Survey of the Subaru Deep Field*, NOAO Friday Scientific Lunch Talk (FLASH), 05/2008
2. Poster: *Lyman Break Galaxies at Redshifts of 1.8 to 2.8 Selected with GALEX/NUV Imaging of the Subaru Deep Field*, The First Subaru International Conference: Panoramic Views of Galaxy Formation and Evolution, 12/2007

3. Poster: *Lyman Break Galaxies in the Redshift Desert: Deep GALEX NUV Imaging of the Subaru Deep Field*, 210th American Astronomical Society Meeting (AAS), 05/2007
4. Invited Talk: *Star-forming Galaxies between $z=0.07-1.47$ in the Subaru Deep Field*, NOAO Friday Scientific Lunch Talk (FLASH), 04/2007
5. Poster: *The Luminosity Function and Star Formation Rate Between Redshifts of 0.07 and 1.47 for Narrow-band Emitters in the Subaru Deep Field*, 208th AAS Meeting, 05/2006