

CONTACT INFORMATION	Department of Physics & Astronomy The Johns Hopkins University 3400 N. Charles Street Baltimore, MD 21218 USA	<i>Phone:</i> (410) 516-4378 <i>Cell:</i> (413) 230-2001 <i>E-mail:</i> liu@pha.jhu.edu <i>Web:</i> http://www.pha.jhu.edu/~liu
RESEARCH INTERESTS	Feedback from luminous quasars; ionization state and gas kinematics of quasar nebulae; the star formation – interstellar medium relation; the star formation scaling laws; dust absorption and emission; statistical properties of H II regions/complexes; extremely gas-rich low surface brightness galaxies	
PROFESSIONAL EMPLOYMENT	Johns Hopkins University – Postdoctoral Fellow	<i>2011 September – present</i>
EDUCATION	University of Massachusetts , Amherst, MA, USA Ph. D., Astronomy, 2011 September <ul style="list-style-type: none"> • Dissertation: “<i>Exploring the Scaling Laws of Star Formation</i>” • Thesis committee: Daniela Calzetti (Advisor), Min S. Yun and Mark H. Heyer; close collaboration with Jin Koda (SUNY Stony Brook) M. Sc., Astronomy, 2006 September University of Science & Technology of China , Hefei, Anhui, China B. Sc., Physics & Astronomy, 2004 July	
ACADEMIC SOCIETIES	American Astronomical Society (AAS) The Honor Society of <i>Phi Kappa Phi</i>	<i>2008 September – present</i> <i>2007 April – 2011 August</i>
ACADEMIC EXPERIENCE	Johns Hopkins University <i>Postdoctoral Fellow</i> (Advisor: Nadia L. Zakamska)	<i>2011 September – present</i> <ul style="list-style-type: none"> • Reduce the Gemini integral field unit (IFU) spectroscopy data of quasar nebulae • Study the size, morphology and kinematics of gaseous outflows from radio-quiet quasars • Compare the nebulosity of Type 1 and Type 2 quasars using IFU data University of Cambridge <i>Visiting Student</i> (Advisor: Robert C. Kennicutt, Jr.) <ul style="list-style-type: none"> • Develop collaboration for thesis projects and papers SUNY Stony Brook <i>Visiting Student</i> (Advisor: Jin Koda) <ul style="list-style-type: none"> • Reduce interferometric CO data of NGC 3521 from CARMA • Reduce CO data from on-the-fly mapping using Nobeyama 45-m telescope • Combine CARMA and Nobeyama CO data for short-spacing correction University of Massachusetts — <i>Research Experience</i> <ol style="list-style-type: none"> 1. PH. D. THESIS PROJECTS — under Daniela Calzetti <i>2007 June – 2011 September</i> <ul style="list-style-type: none"> • Reduce newly obtained HST/NICMOS data of 84 nearby galaxies using the “<i>Drizzle</i>” technique and create continuum-free Paα line images • Study the spatially-resolved star formation law (“Schmidt-Kennicutt law”) in circumnuclear regions of ~ 100 galaxies using HST/NICMOS Paα images and archival CO maps • Reduce CARMA + NRO45 CO ($J=1-0$) data of NGC 3521 and perform pixel-by-pixel analysis of sub-kpc Schmidt-Kennicutt law in NGC 3521 and M51

- Derive luminosity function, size distribution and electron densities of H II regions using HST/NICMOS Pa α images
- Analyze M83 H II region and dust properties using HST WFC3 H α , H β and Pa β images, involved in the WFC3 Early Release Science collaboration
- Investigate the dust content and temperature in the galaxy pair NGC 1512/1510 using AzTEC/ASTE 1.1-mm maps & Spitzer IRAC/MIPS IR images

2. SECOND-YEAR PROJECT — under Stephen E. Schneider 2006 February – 2007 May

- Search for massive ($M_{\text{H I}} \geq 10^{10} M_{\odot}$) low surface brightness galaxies with the Arecibo telescope (part of an optically-guided Arecibo-GBT-Nançay joint H I survey)

3. FIRST-YEAR PROJECT — under Gopal Narayanan 2005 May – 2006 January

- Construct surface accuracy adjustment software for the 50-m Large Millimeter Telescope (LMT) using satellite-aided holography techniques

— *Teaching Experience*

- Assist faculty instructors to teach *Planetary Science* (for astronomy majors), *Exploring the Universe*, *The Solar System*, etc. for 3 years 2004 – 2007
- Host Thursday open house nights and teach basic astronomical observations at the UMass Orchard Hill Observatory for undergraduate students 2004 – 2006

University of Science & Technology of China

Undergraduate Research Assistant — under Fu-Zhen Cheng 2003 August – 2004 June

- Analyze the dynamical impact of the Sagittarius dwarf galaxy on the Galaxy
- Investigate the magnetic interaction processes of the Jupiter-Io system

PROFESSIONAL SERVICES

— Referee for the *Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society*, and the *Publications of the Astronomical Society of Japan*

— External reviewer for China’s Telescope Access Program that allocates time for Magellan, MMT, CFHT and Hale telescopes (2013)

— External reviewer for China’s TAP (2014)

EXTRAMURAL FUNDING

1. Theodore Dunham, Jr. Grant for Research in Astronomy, 2011 December, Co-PI (with Guangtun Zhu), CoIs: Nadia L. Zakamska & Brice Ménard (\$2,920)

2. Kitt Peak National Observatory funding support for thesis projects, 2010 April (\$1,418)

3. Kitt Peak National Observatory funding support for thesis projects, 2009 November (\$726)

4. International travel funding from NRAO/NSF to attend the conference “(Sub)millimeter Astronomy at High Angular Resolution”, ASIAA, Taipei, 2009 June (\$3,600)

AWARDED OBSERVING TIME

— **as Principal Investigator**

1. *Feedback in Luminous Red Quasars at $z \sim 0.5$*
CoIs: Jenny E. Greene, Eilat Glikman, Nadia L. Zakamska
• 14.2 hours, **Gemini**-North + GMOS 2-slit IFU (2014A semester)
2. *Quasar Feedback at the Peak of the Galaxy Formation Epoch*
CoIs: Nadia L. Zakamska, Michael A. Strauss, Jenny E. Greene, Rachael Alexandroff
• 10 hours, **Gemini**-North + GMOS 2-slit IFU (2014A semester)
3. *Quasar Feedback at $z \sim 3$: the Peak of Galaxy Formation Epoch*
CoIs: Nadia L. Zakamska, Michael A. Strauss, Jenny E. Greene, Rachael Alexandroff
• 10 hours, **Gemini**-North + GMOS 2-slit IFU (2013A semester)
4. *Feedback in Unobscured vs. Obscured Quasars*
CoIs: Nadia L. Zakamska, Jenny E. Greene
• 15 hours, **Gemini**-North + GMOS 2-slit IFU (2012B semester)

5. *Feedback from a Spectacular Bubble: SDSS J1356+1026*
CoIs: Jenny E. Greene, Nadia L. Zakamska, Nicole P. H. Nesvadba
• 2.5 hours, **JVLA** + A array (2012B semester)
6. *Exploring the Scaling Laws of Star Formation: the High Density Galaxy Centers: A*
CoI: Daniela Calzetti
• 3.5 nights, **KPNO 2.1-m** + CFIM/T2KB (2009 November)
7. *Exploring the Scaling Laws of Star Formation: the High Density Galaxy Centers: B*
CoI: Daniela Calzetti
• 6.5 nights, **KPNO 2.1-m** + CFIM/T2KB (2010 April)

— as a **Co-Investigator**

8. *Subaru Exploration of Quasar Feedback at Cosmic High Noon*
PI: Yoshiki Matsuoka
CoIs: Michael A. Strauss, Jenny E. Greene, Nadia L. Zakamska, Rachael Alexandroff, Guilin Liu, Tomoko Suzuki
• 4 nights, **Subaru** IRCS + AO188 (pending)
9. *Quasar Feedback at the Peak of Galaxy Formation Epoch*
PI: Nadia L. Zakamska
CoIs: Guilin Liu, Rachael Alexandroff, Jenny E. Greene, Michael A. Strauss
• 4.5 hours, **Gemini-North** + NIFS + Altair (2014A semester)
10. *Exploring the Narrow Line Region Sizes of IR-luminous Type 2 Quasars with GMOS-IFU Data*
PI: Kevin N. Hainline
CoIs: Ryan Hickox, Guilin Liu, Nadia L. Zakamska, Jenny E. Greene
• 14.2 hours, **Gemini-North** + GMOS 2-slit IFU (2014A semester)
11. *Origin of Radio Emission in Radio-Quiet Quasars*
PI: Nadia L. Zakamska
CoIs: Jenny E. Greene, Guilin Liu
• 30 hours, **JVLA** + A array (2014A semester)
12. *The Host Galaxies of High-Luminosity Obscured Quasars at $z \sim 2.5$*
PI: Michael A. Strauss
CoIs: Nicholas P. Ross, Jenny E. Greene, Nadia L. Zakamska, W. Nielsen Brandt, Rachael Alexandroff, Guilin Liu, Paul S. Smith
• 18 orbits, Hubble Space Telescope (**HST**) + WFC3 & ACS (Cycle 20)
13. *An Investigation of the Star Formation Law in NGC 278*
PI: Katherine Alatalo
CoIs: Guilin Liu (initiator & drafter), Jin Koda, Daniela Calzetti
• 32 hours, **CARMA** + C, D & E arrays (2010B semester)

CLASSICAL
OBSERVING
EXPERIENCE

Optical Campaigns

- Kitt Peak 2.1-m telescope + T2KB direct CCD imager 2010 April
— image 31 nearby galaxies in $H\alpha$ and R -band
- Kitt Peak 2.1-m telescope + T2KB direct CCD imager 2009 November
— image 17 nearby galaxies in $H\alpha$ and R -band
- 2.16-m telescope at National Astronomical Observatory of China 2004 April
— image the satellite galaxies interacting with M31

Millimeter Campaigns

- 14-m FCRAO telescope + Redshift Search Receiver (RSR) 2008 April – June
— detect CO lines of high- z ultra-luminous infrared galaxies (led by Min S. Yun)

— detect CO lines of H I-rich low surface brightness galaxies (led by Stephen E. Schneider)
 — conduct a CO line survey of nearby galaxies (led by Ronald L. Snell)
 14-m Five College Radio (mm) Astronomical Observatory (FCRAO) 2005 October
 — test observing runs for instrumental purposes

PRESS
 RELEASES

Liu, G. & Zakamska, N. L., *Quasar Feedback and Galactic-Scale Outflows*, published in Issue 45 (December 2012) of *GeminiFocus* (the twice-annual newsletter of the Gemini Observatory)

CONFERENCE
 PROCEEDINGS

Momose, R., Koda, J., Kennicutt, R. C. Jr, Egusa, F., Okumura, S.K., Calzetti, D., **Liu, G.**, Meyer, J. D., Scoville, N. Z., Sawada, T., & Kuno, N., *The Resolved Kennicutt-Schmidt Law in Nearby Galaxies*, 2013, IAU Symposium, 292, 335

ORAL
 PRESENTATIONS

Research Talks

1. *Evidence for Ubiquitous 10-kpc Scale Feedback from Radio-Quiet Quasars*
 Radio and Geoastronomy Lunch Talk, CfA, Harvard Univ., 2014 February (**invited**)
2. *Integral Field Spectroscopy of Quasar Winds*
 Neighborhood Workshop on Astrophysics and Cosmology, Penn State Univ., 2013 April
3. *Extents, Morphologies and Kinematics of Radio-Quiet Quasar Nebulae*
 Wednesday Science Coffee Talk, STScI, 2013 January (**invited**)
4. *Gemini IFU Observations of Feedback from Radio-Quiet Quasars at $z \sim 0.5$*
 “Black Hole Feedback 2012: What is the role of AGN in the evolution of galaxies?”
 Dartmouth College, 2012 July
5. *Extents and Morphologies of Radio-Quiet Quasar Feedback*
 Informal talk at morning coffee, Princeton Univ., 2012 August
6. *Observations of Feedback from Radio-Quiet Quasars*
 2012 STScI Summer Colloquium Series (“HotSci”), STScI, 2012 June
7. *Understanding the Emission Line ratios in Obscured Quasars with CLOUDY*
 2012 CLOUDY summer school, Univ. of Kentucky, 2012 June
8. *Star Formation in Nearby Galaxies: a Perspective from the Scaling Relations*
 Center for Astrophysical Sciences (CAS) seminar, Johns Hopkins Univ., 2011 November
9. *Exploring the Scaling Laws of Star Formation*
 Ph. D. Dissertation Seminar, UMass, 2011 August
10. *The $P\alpha$ H II Region Luminosity Function in Nearby Galaxies*
 Open group seminar, IoA, Univ. of Cambridge, UK, 2011 May (**invited**)
11. *Dust Extinction of the H II regions in M83 from HST/WFC3 Observations*
 HST/WFC3 Scientific Oversight Committee Meeting, STScI, 2010 June (**invited**)
12. *The Spatially-Resolved Schmidt-Kennicutt Law: Case Studies of Nearby Galaxies*
 Friday Scientific Lunch Talks (“FLASH”), Univ. of Arizona, 2010 April (**invited**)
13. *An Arecibo H I 21-cm Search for Massive Low Surface Brightness Galaxies at $z < 0.1$*
 Second-year project presentation, Univ. of Mass., 2007 January
14. *Constructing the Holographic Surface Accuracy Adjustment Software Package for LMT*
 First-year project presentation, Univ. of Mass., 2006 January
15. *The Sagittarius Dwarf Galaxy and its Dynamical Impact on the Milky Way Galaxy*
 B. Sc. thesis presentation, Dept. of Astronomy, USTC, China, 2004 June
16. *The Magnetically Dynamic System of Jupiter and Io*
 China Division Meeting for the World Space Observatory - UV Satellite (WSO/UV),
 Beijing, China, 2003 November

Journal Talks

1. The prevalence of kpc-scale outflows among AGN 2014

2. Star Formation Rate of the Galaxy Determined from Spitzer-Detected YSOs 2010
3. Dependence of H II Region Properties on Surface Brightness of Galaxy Discs 2009
4. Galaxy-Mass and Galaxy-Dust Correlations through Magnification/Reddening 2009
5. The Star Formation Law in Nearby Galaxies on Sub-Kpc Scales 2008
6. New Insights into the Hubble Sequence: 24 μ m Morphologies of SINGS Galaxies 2008
7. Dust and Atomic Gas in Dwarf Irregular Galaxies of the M81 Group 2007
8. The Supernova Gamma-Ray Burst Connection 2007
9. The Evolution of Galaxies to $z \sim 1$: the Luminosity and Stellar Mass Functions 2006
10. The Spin of Accreting Stars: Dependence on Magnetic Coupling to the Disc 2005
11. A Brief Introduction to Helioseismology 2005

OTHER
CONFERENCES

1. 223rd American Astronomical Society Meeting
— Washington, DC, 2014 January
POSTER: *IFU Observations of Feedback from Radio-Quiet Quasars at $z \sim 0.5$*
2. The SDSS-III Collaboration Meeting 2013
— Johns Hopkins Univ., Baltimore, MD, 2013 June
3. 2012 STScI May Symposium: Gas Flows in Galaxies
— STScI, Baltimore, MD, 2012 May
4. 217th American Astronomical Society Meeting
— Seattle, WA, 2011 January
POSTER: *The Sub-Kpc Schmidt-Kennicutt Law in NGC 3521 and M51a*
5. Stormy Cosmos: The Evolving ISM from Spitzer to Herschel and Beyond
— Spitzer Science Center, Pasadena, CA, 2010 November
POSTER: *The Spatially-Resolved Star Formation Law in NGC 3521 and M51a*
6. 215th American Astronomical Society Meeting
— Washington, DC, 2010 January
POSTER: *An Investigation of the Dust Content in the NGC 1512/1510 Pair*
7. PEARLS – 09: Spiral Arm Substructure in Nearby Galaxies
— STScI, Baltimore, MD, 2009 September
POSTER: *The Spatially-Resolved Star Formation Scaling Laws in Nearby Galaxies*
8. Millimeter and Submillimeter Astronomy at High Angular Resolution
— ASIAA, Taipei, Taiwan, 2009 June
POSTER: *A Near-IR to Millimeter Investigation of the Dust Content in NGC 1512/1510*
9. 213th American Astronomical Society Meeting
— Long Beach, CA, 2009 January
POSTER: *Exploring the Scaling Laws of Star Formation*

COMPUTER
SKILLS

- Professional Software: IRAF, CLOUDY, MIRIAD, Supermongo, Gnuplot, PGPlot, L^AT_EX
- Programming Languages: IDL, C, Mathematica, Python, Gnome/GTK+, Unix shells

REFERENCES

Nadia L. Zakamska, Assistant Professor, Johns Hopkins University
Phone: (410) 516-6657 *E-mail:* zakamska@pha.jhu.edu

Daniela Calzetti, Professor, University of Massachusetts
Phone: (413) 545-3556 *E-mail:* calzetti@astro.umass.edu

Jenny E. Greene, Assistant Professor, Princeton University
Phone: (609) 258-0764 *E-mail:* jgreene@astro.princeton.edu

Jin Koda, Assistant Professor, Stony Brook University
Phone: (631) 632-8063 *E-mail:* jin.koda@stonybrook.edu

Stephen E. Schneider, Professor, Astronomy Department Head, University of Massachusetts
Phone: (413) 545-2076 *E-mail:* schneider@astro.umass.edu