

Kazimierz Sliwa

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RESEARCH INTERESTS

Galaxies:

Luminous Infrared Galaxies
Galaxy Mergers
Giant Molecular Clouds
Star Formation

Interstellar Medium:

Molecular Gas
Physical Conditions
Isotopic Abundances

EXPERIENCE

RESEARCH.....

MPIA

Postdoctoral Researcher

Working on radiative transfer modelling of molecular gas in galaxy mergers and giant molecular cloud analyses in nearby galaxies.

Heidelberg

2015–present

McMaster University

PhD Candidate Researcher

Worked on interferometric data of several luminous infrared galaxies to constrain the physical conditions of the molecular gas as a function of merger stage.

Hamilton

2011–2015

McMaster University

MSc Student Researcher

Worked on interferometric data of the local galaxy merger Arp 299 studying the physical conditions of the molecular gas. Work is published in Sliwa et al. (2012) in The Astrophysical Journal.

Hamilton

2009–2011

University of Toronto

Research Assistant

Worked on spectral data of a high mass X-ray binary system obtained using the Triple Spec spectrometer from the Palomar observatory, as well as previous spectral data taken with the Spitzer space telescope. Supervised by Dr. Dae-sik Moon.

Toronto

2008–2009

OBSERVING.....

IRAM 30m

Six days at the observatory

July 2017

SMA

Five days at the observatory

June 2017

CARMA

Spent one week as the resident observer where I had the responsibility of running the observatory during the night and day.

July 2013

IRAM 30m

Spent 5 days observing my accepted project.

December 2012

JCMT

Spent 1 week as the resident observer.

November 2012

COMPUTING SKILLS

Data Reduction: CASA (advanced), miriad (basic), STARLINK (basic), GILDAS (basic)

Scripting: Python (advanced), IDL (advanced), UNIX (intermediate), IRAF (basic), SQL (basic)

Other: Git (intermediate), HTML (intermediate), CSS (intermediate), LaTeX (advanced)

EDUCATION

McMaster University **Hamilton, Canada**
PhD, Advisor: Dr. Christine Wilson 2011–2015

Thesis: Molecular Gas Properties in Local Luminous Infrared Galaxies

McMaster University **Hamilton, Canada**
MSc, Advisor: Dr. Christine Wilson 2009–2011

Thesis: SMA Observations of the Local Galaxy Merger Arp 299

University of Toronto **Toronto, Canada**
BSc, Advisor: Dr. Dae-Sik Moon 2003–2009

Majored in astrophysics, physics and chemistry

AWARDS

The A. Boyd McLay Ontario Graduate Scholarship \$15,000
2014–2015

Student Proposals for Intellectual Community & Engaged Scholarship \$4,200
2014–2015

Dr. Ronald V. Joyce Ontario Graduate Scholarships in Science \$15,000
2013–2014

Student Proposals for Intellectual Community & Engaged Scholarship \$4,000
2013–2014

Queen Elizabeth II Graduate Scholarships in Science & Technology \$15,000
2012–2013

NSERC Undergraduate Student Research \$8,200
2008

Conferences, Workshops and Presentations

Behind the Curtain of Dust II - The Molecular View of Activity in (U)LIRGs **Sesto, Italy**
Talk: "Revisiting ^{13}CO in Luminous Infrared Galaxies" (Invitation only) 2017

CfA SMA Seminar **Boston, USA**
Talk: ???? 2017

CASCA Annual Meeting 2017 **Edmonton, Canada**
Poster: "The Case of the Missing ^{13}CO in Luminous Infrared Galaxies" 2017

PHANGS Team Meeting 2016 **Heidelberg, Germany**
Participant 2016

Havard-Heidelberg Star Formation Workshop **Heidelberg, Germany**
Poster: "A Tale of Woe for ^{13}CO in Luminous Infrared Galaxies" 2016

PHANGS Data Reduction Team Meeting	Toulouse, France
<i>Participant</i>	2016
Half a Decade of ALMA	Indian Wells, USA
<i>Talk: "A Tale of Woe for ^{13}CO in Luminous Infrared Galaxies"</i>	2016
Half a Decade of ALMA	Indian Wells, USA
<i>Poster: "Cloud Scale View of Spiral Galaxies: First Results from the Nearby Galaxy M74"</i>	2016
XGal Molecular Gas Workshop	Charlottesville, USA
<i>Poster+1min: "Resolved Molecular Gas Properties of Local Luminous Infrared Galaxies"</i>	2016
IAU General Meeting Symposium 315	Honolulu, USA
<i>Poster: "Resolved Molecular Gas Properties of Local Luminous Infrared Galaxies"</i>	2015
CASCA Annual Meeting	Hamilton, Canada
<i>Talk: "Resolved Molecular Gas Properties of Local Luminous Infrared Galaxies"</i>	2015
CASCA Annual Meeting	Hamilton, Canada
<i>Talk: "McMaster's Sidewalk Astronomy: Taking Astronomy to the Streets"</i>	2015
CASCA Annual Meeting	Hamilton, Canada
<i>Poster: "Resolved Molecular Gas Properties of Local Luminous Infrared Galaxies"</i>	2015
AAS 225th Meeting	Seattle, USA
<i>Talk: "Resolved Molecular Gas Properties of Local Luminous Infrared Galaxies"</i>	2015
Hokkaido University Seminar	Sapporo, Japan
<i>Talk: "Resolved Molecular Gas Properties of Local Luminous Infrared Galaxies"</i>	2014
Extragalactic Astrochemistry Workshop	Tokyo, Japan
<i>Participant</i>	2014
Revolution in Astronomy with ALMA	Tokyo, Japan
<i>Poster: "NGC1614: The Ring of Cold, Dense Molecular Gas"</i>	2014
CASCA Annual Meeting	Quebec, Canada
<i>Talk: "Luminous Infrared Galaxies as seen with Modern Interferometers"</i>	2014
Mozilla Software Carpentry Bootcamp	Hamilton, Canada
<i>Participant</i>	2014
Gas and Stars in Galaxies: A Multi-wavelength 3D Perspective	Garching, Germany
<i>Poster: "Luminous Infrared Galaxies with the SMA"</i>	2014
NRAO TUNA Talk	Charlottesville, USA
<i>Talk: "A Look at Luminous Infrared Galaxies with the SMA"</i>	2014
CASCA Annual Meeting	Vancouver, Canada
<i>Poster: "Luminous Infrared Galaxies with the Submillimeter Array"</i>	2013
Star Formation Jamboree	Hamilton, Canada
<i>1 min slide: "Exploring the Starburst of Arp 299"</i>	2013
Joint Astronomy Center Seminar	Hilo, USA
<i>Talk: "Luminous Infrared Galaxies with the SMA"</i>	2012
Galactic Scale Star Formation Conference	Heidelberg, Germany
<i>Poster + 1 min: "Exploring the Starburst of Arp 299"</i>	2012

CASCA Annual Meeting

Poster: "High Resolution Interferometric Observations of the Local Galaxy Merger Arp 299"

London, Canada

2011

McMaster Symposium Day

Talk: "SMA Observations of the Local LIRG Arp 299"

Hamilton, Canada

2010

Twelfth Synthesis Imaging Summer School

Participant

Socorro, NM, USA

2010

Successful Observing Proposals**ALMA**

Cycle 4: Project 0921

PI; High Priority

"Stirring the Pot: Giant Molecular Clouds in the Local Galaxy Merger NGC 3256"

Cycle 4: Project 0777

PI; High Priority

"Nucleosynthesis Enrichment in a Cosmic Yo-Yo"

Cycle 3: Project 0804

PI; Filler

"The Galaxy Merger Process: Molecular Gas Properties at the Beginning and the End"

Cycle 3: Project 0714

PI; High Priority

"Stirring the Pot: Giant Molecular Clouds in the Local Galaxy Merger NGC 3256"

Cycle 3: Project 0287

PI; Filler

"The Almost Forgotten Local Ultra Luminous Infrared Galaxy: IRAS 13120-5453"

Cycle 2: Project 0379

PI; Filler

"The Forgotten Local Ultra Luminous Infrared Galaxy: IRAS 13120-5453"

Cycle 2: Project 0469

PI; High Priority

"The Warm Molecular Gas of VV 114"

CARMA

Project c1062

PI; Granted 27.5hrs

"Observations of ^{13}CO J=2-1 in Luminous Infrared Galaxies"

Project c1060

PI; Granted 19hrs

"Constraining the Physical Conditions of Arp 299"

Project c0988

PI; Granted 34hrs

"Mapping the Molecular Gas of Luminous Infrared Galaxies"

Project c0873

PI; Granted 22hrs

"CO Observations of Luminous Infrared Galaxies"

IRAM 30m**Project 055-17 (Large Program)**

PI; Granted 173 hrs

"Carbon and Oxygen Isotopic Ratios in M51"

Project 180-12

PI; Granted 36hrs

"Mapping the Molecular Gas in Luminous Infrared Galaxies"

NOEMA

Project W16BL

PI; Granted 20.2hrs

"In a Luminous Infrared Galaxy Far, Far Away: Observations of ^{13}CO and C^{18}O in UGC 5101"**JCMT**

Project M12BC14

PI; Granted 39hrs

"Mapping CO J=2-1 in Luminous Infrared Galaxies"

Project M11AC06

PI; Granted 22hrs

"Observations of Arp 299 in CO J=2-1"

SMA

2016B: Project S035

PI; Granted 10 tracks

"A Cloud-Scale Map of CO J=2-1-to-J=1-0 Line Ratio in M51"

2012B: Project S029

PI; Granted 8 hrs

Institutional Duties

- Star Formation and ISM in Nearby Galaxies Meeting** **Heidelberg, Germany**
Organizer *2016–present*
Organize bi-weekly meetings to discuss star formation and ISM matters in nearby galaxies.
- PHANGS Team Meeting** **Heidelberg, Germany**
Organizer *Dec 2016*
Organized and ran the PHANGS collaboration team meeting held at MPIA.

Education and Outreach

- McMaster's Sidewalk Astronomy** **Hamilton, Canada**
Co-Founder/Organizer *2012–2015*
Setup weekly public observing events on McMaster's campus. Secured funding to purchase another telescope and other equipment. Over 3000 participants have attended as of April 2015.
- McMaster McCallion Planetarium** **Hamilton, Canada**
Presenter *2010–2015*
Presented interactive planetarium shows (of my own design) to public and private groups such as school classes, cub scouts and day camps. As of November 2014, 107 shows have been given.
- Let's Talk Science** **Hamilton, Canada**
Volunteer *2010–2015*
Let's Talk Science is a national organization devoted to improving science literacy by providing science-learning programs to kids. Volunteered to help with the "All Science Challenge Fun House" demonstrating simple science experiments to elementary school kids as they came into the room. *Was named the Volunteer of the Month for September 2014.*
- Canadian Undergraduate Physics Conference** **Hamilton, Canada**
Judge *Fall 2013*
Volunteered to judge talks given by undergraduates from all over Canada.
- Science Rendezvous** **Hamilton, Canada**
Volunteer *2013–2015*
Science Rendezvous is a national day of science. Helped with scientific activities all over the city of Hamilton, Ontario.
- McMaster Venus Transit Public Viewing** **Hamilton, Canada**
Volunteer *June 2012*
Volunteered to help out with the public viewing of the transit of Venus across the Sun, a twice in a lifetime event, with the departmental 30 cm telescope.
- Departmental Graduate Student Mentor** **Hamilton, Canada**
Mentor *2012–2014*
Volunteered to mentor an incoming graduate student to the department.
- McMaster Science and Engineering Olympics** **Hamilton, Canada**
Volunteer *2012–2014*
An event held on the McMaster campus that hosts various science and engineering activities that high school kids take part in and compete against other schools. Volunteered to help out with the "Physics Paper Triathlon" where I was in charge of the bridge building competition.

PUBLICATIONS

Referred:

- 11. **Sliwa, K.**, Wilson, C.D., Aalto, S. and Privon, G.C. , *Extreme CO Isotopic Abundance in the ULIRG IRAS 13120-5453: An Extremely Young Starburst or Top-heavy Initial Mass Function*, 2017, ApJL, 840, L11
- 10. **Sliwa, K.** and Downes, D., *PdBI U/LIRG Survey (PULS): Dense Molecular Gas in Arp 220 and NGC 6240*, 2017, A&A, in press, arXiv:1704.03766
- 9. **Sliwa, K.** , Wilson, C.D., Petitpas, G.R., Matsushita, S., Peck, A.B., Saito, T., Yun, M., *Luminous Infrared Galaxies with the Submillimeter Array V: Molecular Gas in Intermediate to Late-Stage Mergers*, 2017, ApJ, in 840, 8
- 8. Jiménez-Donaire, M. J., Cormier, D., Bigiel, F., Leroy, A. K., Gallagher, M., Krumholz, M. R., Usero, A., Hughes, A., Kramer, C., Meier, D., Murphy, E., Pety, J., Schinnerer, E., Schrubba, A., Schuster, K., **Sliwa, K.**, Tomicic, N., *$^{13}\text{CO}/\text{C}^{18}\text{O}$ Gradients Across the Disks of Nearby Spiral Galaxies*, 2017, ApJL, 836, 29
- 7. Privon, G. C., Aalto, S., Falstad, N., Muller, S., González-Alfonso, E., **Sliwa, K.**, Treister, E., Costagliola, F., Armus, L., Evans, A. S., Garcia-Burillo, S., Izumi, T., Sakamoto, K., van der Werf, P., Chu, J. K., *The Dense Molecular Gas and Nuclear Activity in the ULIRG IRAS 13120-5453*, 2017, ApJ, 835, 213
- 6. Saito, T., Iono, D., Xu, C. K., **Sliwa, K.**, Ueda, J., Espada, D., Kaneko, H., König, S., Nakanishi, K., Lee, M., Yun, M. S., Aalto, S., Hibbard, J. E., Yamashita, T., Motohara, K., Kawabe, R., *Spatially Resolved CO SLED of the Luminous Merger Remnant NGC 1614 with ALMA*, 2017, ApJ, 835, 174
- 5. Leroy, A. K., Hughes, A., Schrubba, A., Rosolowsky, E., Blanc, G. A., Bolatto, A. D., Colombo, D., Escala, A., Kramer, C., Kruijssen, J. M. D., Meidt, S., Pety, J., Querejeta, M., Sandstrom, K., Schinnerer, E., **Sliwa, K.**, Usero, A., *A Portrait of Cold Gas in Galaxies at 60 pc Resolution and a Simple Method to Test Hypotheses that Link Small-Scale ISM Structure to Galaxy-Scale Processes*, 2016, ApJ, 831, 16
- 4. Querejeta, M., Schinnerer, E., García-Burillo, S., Bigiel, F., Blanc, G. A., Colombo, D., Hughes, A., Kreckel, K., Leroy, A. K., Meidt, S. E., Meier, D. S., Pety, J. and **Sliwa, K.**, *AGN Feedback in the Nucleus of M51*, 2016, A&A, 593, 118
- 3. **Sliwa, K.**, Wilson, C. D., Iono, D., Peck, A. and Matsushita, S., *Around the Ring We Go: The Cold, Dense Ring of Molecular Gas in NGC 1614*, 2014, ApJL, 796, L15
- 2. **Sliwa, K.**, Wilson, C.D., Krips, M., Pepitpas, G.R., Iono, D., Juvela, M., Matsushita, S., Peck, A.B., and Yun, M., *Luminous Infrared Galaxies with the Submillimeter Array IV. $^{12}\text{CO } J=6-5$ Observations of VV 114*, 2013, ApJ, 777, 126
- 1. **Sliwa, K.**, Wilson, C.D., Pepitpas, G.R., Armus, L., Juvela, M., Matsushita, S., Peck, A.B., and Yun, M.S, *Luminous Infrared Galaxies with the Submillimeter Array III. The Kiloparsec Molecular Concentrations of Arp 299*, 2012, ApJ, 753, 46

Non-Refereed:

- 1. **Sliwa, K.**, Wilson, C. D., Iono, D., Peck, A. and Matsushita, S., *Around the Ring We Go: The Cold, Dense Ring of Molecular Gas in NGC 1614*, 2015, ASPC, 499, 141