

AMANDA ANN KEPLEY

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RESEARCH FOCUS

Galaxies, star formation, magnetic fields, and the interstellar medium.

EDUCATION

University of Wisconsin—Madison	Astronomy	Ph.D., December 2008
University of Wisconsin—Madison	Astronomy	M.S., August 2004
Case Western Reserve University	Astronomy	B.S., summa cum laude, 2002

RESEARCH EMPLOYMENT

National Radio Astronomy Observatory	Assistant Scientist	3/2017 – present
• North American ALMA Science Center (NAASC)		
National Radio Astronomy Observatory	Postdoctoral Fellow	9/2012 – 2/2017
• North American ALMA Science Center (NAASC)		9/2014 – present
• Green Bank Telescope		9/2012 – 8/2014
University of Virginia	Research Associate	10/2008 – 8/2012
• <i>Supervisor:</i> Dr. Kelsey E. Johnson		
• Visiting appointment at the National Radio Astronomy Observatory		
University of Wisconsin—Madison	Research Assistant	8/2002 – 9/2008
• <i>Advisor:</i> Dr. Eric M. Wilcots		

GRANTS, AWARDS, AND HONORS

Over 30 successful PI telescope time proposals including:	2004 – present
• GBT 4mm Large Proposal (17A, high frequency oversubscription 4:1)	
• ALMA cycle 1 proposal (top 10%, highest priority, oversubscription 6:1)	
• 2 EVLA Resident Shared Risk Proposals (10A and 12A semesters, oversubscription 4:1)	
American Astronomical Society International Travel Grant	2012, 2015
National Radio Astronomy Observatory Foreign Telescope Fund Grant	2009, 2010
Green Bank Telescope (GBT) Student Support Award	2005 – 2008
National Science Foundation Graduate Research Fellowship	2003 – 2007
Wisconsin Space Grant Consortium Graduate Fellowship	2003, 2007
Karl Guthe Jansky and Alice Knapp Jansky Award, University of Wisconsin	2006

TECHNICAL EXPERIENCE

Atacama Large Millimeter/submillimeter Telescope (ALMA)	
• Member of Software Support Team (Lead: Brian Mason)	12/2015 – present
• Member of North American (NA) Imaging Team	10/2014 – 9/2015
• ALMA Imaging Pipeline Testing	9/2015 – present
○ Performed initial comparison of manual and pipeline images for C3R3	
○ Generated benchmark images and participated in discussions for C3R4	
○ Currently designing and testing an auto-masking algorithm for the Cycle 4 patch	

- Creator and maintainer of NA imaging script template 10/2014 – present
 - CASA testing 11/2014 – present
 - Data reduction and imaging 9/2014 – present
 - Presenter for ALMA Community Days/NRAO Live! 3/2015 – present
 - Contact Scientist 9/2014 – present
- Green Bank Telescope
- Organized continuum polarization workshop 6/2015
 - Published the first paper based on data from the new 4mm receiver 1/2014
 - Coordinated astronomical testing for new backend (VEGAS) 9/2013 – 8/2014
 - Support Scientist 9/2012 – 8/2014
- Very Large Array (VLA)
- Resident Shared Risk Observer for the Expanded Very Large Array 2/2012 – 5/2012
 - CASA testing 2/2012 – 5/2012
 - Wrote OPT Quickstart Guide 2/2012 – 5/2012
- Observing Experience
- GBT, VLA, ALMA, Australian Telescope Compact Array, Arizona Radio Observatory 12-m and Submillimeter Telescopes, Mopra, WIYN (Sparsepak and WHIRC), KPNO 2.1m.
- Software Experience
- Expert user of CASA, AIPS, and GBTIDL. Familiar with Miriad, Unipops, Class, and ASAP. Fluent in IDL. Strong Python and git skills.

SERVICE

- National Science Foundation (US) Astronomy and Astrophysics Grant Review Panel Member
 Reviewer for National Science Centre (Poland), Stratospheric Observatory for Infrared Astronomy (SOFIA), and Large Millimeter Telescope (LMT)
 Referee for *Nature*, *Astronomical Journal*, *Astrophysical Journal*, *Astronomy and Astrophysics*, and *Monthly Notices of the Royal Astronomical Society*
- U.S. Radio/Millimeter/Submillimeter Science Futures II, ngVLA working group 7 – 8/2016
- Scientific Organizing Committees
- ALMA Postdoctoral Symposium*, Indian Wells, CA (Chair) 7 – 9/2016
 - Molecular Gas in Galactic Environments*, Charlottesville, VA 4/2016
 - NRAO Postdoctoral Symposium*, Green Bank, WV 1/2013 – 4/2013
- Technical Secretary for ALMA Science Review Panel 6/2016
 Tuesday Lunch Talk Organizer, NRAO – Charlottesville 10/2014 – 10/2015
 NRAO Green Bank Colloquium Committee 3/2013 – 8/2014
 NRAO Student Programs Review Committee 11/2013
 Star Formation Journal Club Organizer 10/2008 – 1/2012

MENTORING

- 7 graduate students (L.M. Walker, B. Mullan, K. Rabidoux, L. Barcos, C. Lee, L. Bittle, A. Desouza) and 3 undergraduates (S. Schmitz, E. Wilson, A. Wofford). My role included:
- Assisting with writing telescope time proposals (Bittle, Walker, Barcos, Rabidoux, and Mullan)
 - Providing extensive feedback on paper drafts (Schmitz, Walker, Mullan, Rabidoux)
 - Guiding student-led research projects (Schmitz, Mullan, Desouza, Wilson, Wofford)
 - Teaching students how to use radio telescopes effectively (Bittle, Walker, Barcos, Lee)

TEACHING AND OUTREACH EXPERIENCE

Lecturer and Project Team Leader for Single Dish Summer School

- Designed a small-group, hands-on project July 2013
- Co-lectured on combining single-dish and interferometer data July 2013, 2015

Instructor, Observational Astronomy for Majors, University of Virginia Fall 2011

- Re-designed course, integrating best learning practices and appropriate technology
- Guided students in original research projects, which they presented in a poster session

Course Design Institute, University of Virginia 5/2011

- Designed a learner-centered syllabus for a future course during a five-day workshop

Introductory Teaching Excellence Workshop 1/2009

- Attended a two-day course on effective teaching strategies for introductory astronomy courses

Presented more than a dozen public talks 2006 – present

Introductory Astronomy Tutor, University of Wisconsin–Madison 2005 – 2008

Expanding Your Horizons (EYH) 2003, 2005 – 2007

- Developed and led astronomy activities to increase the interest of middle-school girls in science.

RECENT TALKS

- Lunch Talk, NRAO/University of Virginia, Charlottesville, VA 8/30/2016
- Contributed Talk, *Observatory Operations and Processes*, Edinburgh, Scotland 6/27/2016
- Contributed Talk, *Molecular Gas in Galactic Environments*, Charlottesville, VA 4/6/2016
- Seminar, University of New Mexico, Albuquerque, NM 3/21/2016
- Seminar, University of Texas-Austin, Austin, TX 3/9/2016
- Colloquium, Virginia Tech, Blacksburg, VA 5/4/2015
- Seminar, University of Pennsylvania, Philadelphia, PA 3/8/2015
- Contributed Talk, *Revolution in Astronomy with ALMA - the 3rd year* 12/2014
- Colloquium, U.S. Naval Observatory, Washington, DC 11/2014
- Contributed Talk, *Transformational Science in the ALMA Era* 8/2014
- Seminar, Johns Hopkins University and Space Telescope, Baltimore, MD 4/2014
- Seminar, University of Iowa, Iowa City, IA 3/2014
- Colloquium, George Southern University, Statesboro, GA 1/2014
- Seminar, University of Minnesota, Minneapolis, MN 11/2013
- Colloquium, University of Wisconsin-Madison, Madison, WI 11/2013
- Seminar, National Radio Astronomy Observatory, Charlottesville, VA 11/2013
- Seminar, American Museum of Natural History, New York, NY 5/2013
- Seminar, University of Massachusetts-Amherst, Amherst, MA 5/2013
- Seminar, University of Maryland, College Park, MA 5/2013
- Seminar, West Virginia University, Morgantown, WV 2/2013
- Colloquium, Max Planck Institute for Radio Astronomy, Bonn Germany 10/2012
- Invited Talk, *The low-metallicity ISM*, Göttingen, Germany 10/2012
- Contributed Talk, *Star Formation in Dwarf Galaxies*, Flagstaff, AZ 6/2012
- Seminar, National Radio Astronomy Observatory, Socorro, NM 4/2012
- Colloquium, New Mexico Tech, Socorro, NM 3/2012
- Colloquium, Macalester College 3/2012

PRESS RELEASES:

- "VLA Reveals Spectacular "Halos" of Spiral Galaxies", NRAO, 10/13/2015

- "Hidden Details Revealed in Nearby Starburst Galaxy", NRAO, 12/9/2013

PUBLICATIONS

REFEREED PUBLICATIONS

23 total, 8 first author, 4 second or third author, 11 nth author.

351 citations. Mean citations per paper = 15.2. h-index (all) = 11. h-index (1st author) = 7. (12/30/2016).

* indicates paper lead by student

indicates paper featuring ALMA data

1. Leroy, Adam; Usero, Antonio; Schrubba, Andreas; Bigiel, Frank; Kruijssen, Diederik; **Kepley, Amanda**; Blanc, Guillermo; Bolatto, Alberto; Cormier, Diane; Gallagher, Molly; Hughes, Annie; Jimenez-Donaire, Maria; Rosolowsky, Erik W.; and Schinnerer, Eva. “Millimeter-Wave Line Ratios and Sub-beam Volume Density Distributions”, *Astrophysical Journal*, accepted.
2. Basu, Aritra; Mao, S.A.; **Kepley, Amanda A.**; Robishaw, Timothy; Zweibel, Ellen G.; and Gallagher III, John S. 2016, “Detection of a ~20 kpc coherent magnetic field in the outskirts of merging spirals: the Antennae galaxies”, *Monthly Notices of the Royal Astronomical Society*, 464, 1003.
3. # **Kepley, Amanda A.**; Leroy, Adam K.; Johnson, Kelsey E.; Sandstrom, Karin; C.-H. Rosie Chen. 2016, “The Molecular Clouds Fueling a 1/5 Solar Metallicity Starburst”, *Astrophysical Journal*, 828, 50.
4. Bigiel, Frank; Leroy, Adam K.; Jiménez-Donaire, Maria J.; Pety, Jérôme; Usero, Antonio; Cormier, Diane; Bolatto, Alberto; Garcia-Burillo, Santiago; Colombo, Dario; González-García, Manuel; Hughes, Annie; **Kepley, Amanda A.**; Kramer, Carsten; Sandstrom, Karin; Schinnerer, Eva; Schrubba, Andreas; Schuster, Karl; Tomicic, Neven; Zschaechner, Laura. 2016, “The EMPIRE Survey: Systematic Variations in the Dense Gas Fraction and Star Formation Efficiency from Full-disk Mapping of M51”, *Astrophysical Journal Letters*, 822, 26.
5. Li, Jiang-Tao; Beck, Rainer; Dettmar, Ralf-Jurgen; Heald, George; Irwin, Judith A.; Johnson, Megan; **Kepley, Amanda**; Krause, Marita; Murphy, Eric; Orlando, Elena; Rand, Richard; Strong, Andrew; Vargas, Carlos; Walterbos, René; Wang, Daniell; Wiegert, Theresa. 2015, “CHANG-ES VI: Probing Supernova Energy Deposition in Spiral Galaxies Through Multi-Wavelength Relationships”, *Monthly Notices of the Royal Astronomical Society*, 456, 1723.
6. * Walker, Lisa May; Johnson, Kelsey E.; Gallagher, Sarah C.; Privon, George C.; **Kepley, Amanda A.**; Whelan, David G.; Desjardins, Tyler D.; Zabludoff, Ann I. 2015, “Global Properties of Neutral Hydrogen in Compact Groups”, *Astronomical Journal*, 151, 30.
7. Wiegert, T.; Irwin, J.; Miskolczi, A.; and 21 co-authors including **Kepley, Amanda**. 2015, “CHANG-ES. IV. Radio Continuum Emission of 35 Edge-on Galaxies Observed with the Karl G. Jansky Very Large Array in D Configuration—Data Release 1”, *Astronomical Journal*, 150, 81.
8. # ALMA Partnership; Fomalont, E.B.; Vlahakis, C.; and 246 co-authors including **Kepley, Amanda**. 2015, “The 2014 ALMA Long Baseline Campaign: An Overview”, *Astrophysical Journal Letters*, 808, L1.

9. Chennamangalam, Jayanth; Scott, Simon; Jones, Glenn; Chen, Hong; Ford, John; **Kepley, Amanda**; Lorimer, D. R.; Nie, Jun; Prestage, Richard; Anish Roshi, D.; Wagner, Mark; Werthimer, Dan. 2014, "A GPU-Based Wide-Band Radio Spectrometer", *Publications of the Astronomical Society of Australia*, 31, e048.
10. Salas, Pedro; Galaz, Gaspar; Salter, Demerese; Herrera-Camus, Rodrigo; Bolatto, Alberto D.; **Kepley, Amanda**. 2014, "Extended HCN and HCO⁺ emission in the starburst galaxy M82", *Astrophysical Journal*, 797, 134.
11. **Kepley, Amanda A.**; Reines, Amy E.; Johnson, Kelsey E.; and Walker, Lisa May. 2014, "High Resolution Radio and Optical Observations of the Central Starburst in the Low Metallicity Dwarf Galaxy Merger II Zw 40", *Astronomical Journal*, 147, 43.
12. **Kepley, Amanda A.**; Leroy, Adam, K.; Frayer, David; Marvil, Josh; Walter, Fabian. 2014, "The Green Bank Telescope Maps the Dense, Star-Forming Gas in the Nearby Starburst Galaxy M82", *Astrophysical Journal Letters*, 780, L13.
13. * Rabidoux, Katie; Pisano, D.J.; **Kepley, Amanda A.**; Johnson, Kelsey E.; Balser, Dana S. 2014, "Radio continuum observations of local star-forming galaxies using the Caltech Continuum Backend on the Green Bank Telescope", *Astrophysical Journal*, 780, 19.
14. # Indebetouw, Remy; Brogan, Crystal; Chen, C.-H. Rosie; Leroy, Adam; Johnson, Kelsey; Muller, Erik; Madden, Suzanne; Cormier, Diane; Galliano, Frederic; Hughes, Annie; Hunter, Todd; Kawamura, Akiko; **Kepley, Amanda**; Lebouteiller, Vianney; Meixner, Margaret; Oliveira, Joana M.; Onishi, Toshikazu; Vasyunina, Tatiana. 2013, "ALMA Resolves 30 Doradus: Sub-parsec Molecular Cloud Structure Near the Closest Super-Star Cluster", *Astrophysical Journal*, 774, 73.
15. * Mullan, B.; **Kepley, A.A.**; Maybhate, A.; English, J.; Knierman, K.; Hibbard, J.E.; Bastian, N.; Charlton, J.C.; Durrell, P.R.; Gronwall, C.; Elmegreen, D.; Konstantopoulos. 2013, "Under Pressure: Star Clusters and the Neutral Hydrogen Medium of Tidal Tails", *Astrophysical Journal*, 768, 194.
16. Hunter, Deidre A.; Fakhri, Zahedy; Bowsher, Emily C.; Wilcots, Eric M.; **Kepley, Amanda A.**; and Gaal, Veronika. 2011, "Mapping the Extended HI Distribution of Three Dwarf Galaxies", *Astronomical Journal*, 142, 173.
17. **Kepley, Amanda A.**; Chomiuk, Laura; Johnson, Kelsey E.; Goss, W.M.; Balser, Dana S.; and Pisano, D.J. 2011, "Unveiling Extragalactic Star Formation Using Radio Recombination Lines: An EVLA Pilot Study with NGC 253", *Astrophysical Journal Letters*, 739, L24.
18. **Kepley, Amanda A.**; Zweibel, Ellen G.; Wilcots, Eric M.; Johnson, Kelsey E.; and Robishaw, Timothy. 2011, "The Magnetic Field of the Irregular Galaxy NGC 4214", *Astrophysical Journal*, 736, 139.
19. * Mullan, B.; Konstantopoulos, I.S.; **Kepley, A.**; Lee, K.H.; Charlton, J.C.; Knierman, K.; Bastian, N.; Chandar, R.; Durrell, P.R.; Elmegreen, D.; English, J.; Gallagher, S.C.; Gronwall, C.; Hibbard, J.E.; Hunsberger, S.; Johnson, K.E.; Maybhate, A.; Palma, C.; Tranco, G.; and Vacca, W.D. 2011, "Star Clusters in the Tidal Tails of Interacting Galaxies: Photometric

- Properties and the Tail Environment", *Astrophysical Journal*, 731, 93.
20. **Kepley, Amanda A.**; Mühle, Stefanie; Wilcots, Eric M.; Zweibel, Ellen G.; and Klein, Uli. 2010, "The Role of the Magnetic Field in the Interstellar Medium of the Post-Starburst Dwarf Irregular Galaxy NGC 1569", *Astrophysical Journal*, 712, 536-557.
 21. Morrison, H.L.; Helmi, A.; Sun, J.; Gu, R.; Norris, J.E.; Harding, P.; Kinman, T.D.; **Kepley, A. A.**; Freeman, K.C.; Williams, M.; van Duyne, J. 2009, "Fashionably Late? Building up the Milky Way's Inner Halo", *Astrophysical Journal*, 694, 130-143.
 22. **Kepley, Amanda A.**; Morrison, Heather L.; Helmi, Amina; Kinman, T.D.; van Duyne, Jeffrey; Martin, John C.; Harding, Paul; Norris, John E.; and Freeman, Kenneth C. 2007, "Halo Star Streams in the Solar Neighborhood", *Astronomical Journal*, 134, 1579-1595.
 23. **Kepley, Amanda A.**; Wilcots, Eric M.; Hunter, Deidre A.; Nordgren, Tyler. 2007, "A High-Resolution Study of the HI Content of Local Group Dwarf Irregular Galaxy WLM", *Astronomical Journal*, 133, 2242-2257.

DOCUMENTATION AND TECHNICAL MEMOS

1. **Kepley, Amanda A.**; Tsutsumi, Takahiro; Indebetouw, Remy; Brogan, Crystal; Mason, Brian; McNichols, Andrew; Harrison, Rachel; Meyer, Jennifer Donovan; Hibbard, John; Yoon, Ilsang. 2016, "Developing a General Automasking Algorithm for the ALMA Imaging Pipeline", CAS-9090 (internal document).
2. **Kepley, Amanda A.**; Meyer, Jennifer Donovan; Brogan, Crystal; Moullet, Arielle; Hibbard, John; Indebetouw, Remy; Mason, Brian. 2016, "Not letting the perfect be the enemy of the good: steps toward science-ready ALMA images", Proc. SPIE 9910, Observatory Operations: Strategies, Processes, and Systems VI, 99100C (July 15, 2016); doi:10.1117/12.2231737.
3. Brogan, C., Indebetouw, R., Hunter, T. Hibbard, J., Mason, B., **Kepley, A.**, Donovan Meyer, J., Harrison, R., and McNichols, A. 2016, "Benchmark Imaging and Simulations for Comparison with the C3R4 Pipeline", CAS-8390 (internal document).
4. Hibbard, J., Indebetouw, R., and **Kepley, Amanda**. 2015, "NAASC Test of C3R3 Imaging Pipeline", SCIREQ-339 (internal document).
5. R. M. Prestage and 17 co-authors including **A. Kepley**, 2015, "The versatile GBT astronomical spectrometer (VEGAS): Current status and future plans," Radio Science Meeting (Joint with AP-S Symposium), 2015 USNC-URSI, Vancouver, BC, Canada, pp. 294-294.
6. **Kepley, Amanda A.** 2014, edited GBT Proposer's Guide (Section 3.3) and GBT Observer's Guide (Section 6.2) for new spectral line backend (VEGAS).
7. **Kepley, Amanda A.**; Maddalena, Ron; and Prestage, Richard. 2014, "Recommended Minimum Switching Periods for VEGAS." GBT Memo 288. (Green Bank, WV: NRAO). <https://safe.nrao.edu/wiki/bin/view/GB/Knowledge/GBTMemos>

8. Di Francesco, J., Johnstone, D., Matthews, B.C., et al. (including **A. Kepley**). 2013, "The Science Cases for Building a Band 1 Receiver Suite for ALMA", arXiv:1310.1604
9. **Kepley, Amanda A.** 2013, "How to Observe" on astrobetter.com, <http://www.astrobetter.com/wiki/tiki-index.php?page=How+to+observe>
10. Heiles, Carl; Robishaw, Tim; **Kepley, Amanda**; and Furea Kiuchi. 2012, "All-Stokes Single Dish Data with the RHSTK (Robishaw/Heiles SToKes) Software Package."
11. **Kepley, Amanda A.** 2012, "OPT Quickstart Guide." (Socorro, NM: NRAO). <http://evlaguides.nrao.edu/index.php?title=Category:OPT-QuickStart> (now depreciated)
12. **Kepley, Amanda A.** 2007, AIPS Scripting Guide: Part 1, Part 2, Part 3. <http://aipsforum.blogspot.com/2007/04/teaching-monkey-to-dance-scripting-aips.html>