Justin Spilker

Department of Astronomy
University of Texas at Austin
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Employment

Harlan J. Smith McDonald Observatory Postdoctoral Fellow *Sept. 2017 – present*
University of Texas at Austin

Education

University of Arizona *Ph.D., Astronomy and Astrophysics, August 2017*
Thesis: Gas, Dust, and Quenching of Dusty Galaxies in the Early Universe
Advisor: Daniel P. Marrone

University of Arizona *M.S., Astronomy, August 2013*
Advisor: Daniel P. Marrone

Iowa State University *Bachelor of Science, Physics, May 2011*
Minors: Astronomy, Spanish *Magna Cum Laude*

Honors & Awards

2017 - SOFIA General Observing Grant (~$14,000)
2016 - SOFIA General Observing Grant (~$7,000)
2015 - TRIF Imaging Fellowship Award (~$10,000)
2013 - University of Arizona College of Sciences Departmental Service Award
2011 - University of Arizona College of Sciences Fellowship
2011 - *Magna Cum Laude*, Iowa State University
2011 - Chambliss Undergraduate Astronomy Achievement Award, AAS

Telescope Time Awarded as PI

ALMA, Cycle 5 – *Establishing the Best Tracers of Molecular Outflows Across Redshift and Galaxy Properties*
ALMA, Cycles 3 and 4 (Highest priority) – *Shut it Down: Probing Molecular Feedback in z=4-5 Dusty Star-Forming Galaxies*
ALMA, Cycle 4 – *Constraining Quenching Processes in Galaxies Significantly Below the Main Sequence at z ~ 0.7*
VLA, 2017B (Highest Priority) – *Testing Quenching Mechanisms by Resolving the Gas in a z ~ 2.5 Quenching Galaxy*
VLA, 2015B and 2016A – *Probing the Gas Reservoirs of the Progenitors of Early Quiescent Galaxies*
SOFIA, Cycles 5 and 6 – *Using High-Ionization Lines in Low-Metallicity Galaxies to Calibrate a Purely FIR Metallicity Diagnostic*
ATCA, 2012OCT – *An Oasis in the Redshift Desert: Completing the First ALMA Redshift Survey of Galaxies Discovered by the South Pole Telescope*

Professional Service

Referee for *The Astrophysical Journal* and *Monthly Notices of the Royal Astronomical Society*
Proposal Reviewer for *Hubble Space Telescope* large programs and the James Clerk Maxwell Telescope
President of the Steward Observatory Graduate Student Council, 2012-2014
Graduate Representative, University of Arizona Department of Astronomy graduate admissions

Outreach, Teaching, & Other Service

2016 - University of Arizona Teaching Assistant, Introductory Astronomy
2015 - University of Arizona Teaching Assistant, Stellar Astrophysics
2013 - University of Arizona Teaching Assistant, Introductory Astronomy
2013 - Graduate Representative, Arizona Astronomy Committee on Mentoring
2012 - Undergraduate Kepler Research Mentor
2012 - Advanced Astronomy Camp Counselor
2012 - Meteor Crater Solar Eclipse Outreach Project
2010 - Physics Teaching Assistant, Iowa State University
2010 - Physics Mentor, Iowa State University

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Publications

First-Author and Significant Contribution Refereed Journal Articles

10. *Resolving a Fast Molecular Outflow From a Dusty Star-Forming Galaxy in the Early Universe*
    J. Spilker et al., 2017, *Science*, submitted.
9. *Galaxy Growth in a Massive Halo in the First Billion Years of Cosmic History*
    D.P. Marrone, **J. Spilker**, et al., 2017, *Nature*, in press.
8. *Massive Quenched Galaxies at z ~ 0.7 Retain Large Molecular Gas Reservoirs*
    K. Suess, R. Bezanson, **J. Spilker**, et al., 2017, *Astrophysical Journal*, 846, 14.
7. *Low Gas Fractions Connect Compact Star-Forming Galaxies to their z~2 Quiescent Descendants*
    J. Spilker et al., 2016*, Astrophysical Journal*, 832, 19.
6. *ALMA Imaging and Gravitational Lens Models of South Pole Telescope-Selected Dusty, Star-Forming Galaxies at High Redshifts*
    J. Spilker, D.P. Marrone, et al., 2016, *Astrophysical Journal*, 826, 112.
5. *A Survey of the Cold Molecular Gas in Gravitationally Lensed Star-Forming Galaxies at z=2-6*
    M. Aravena, **J. Spilker**, et al., 2016, *MNRAS*, 457, 4406.
4. *Stellar Masses and Star Formation Rates of Lensed, Dusty, Star-Forming Galaxies from the SPT Survey*
    J. Ma, A.H. Gonzalez, **J. Spilker**, et al., 2015, *Astrophysical Journal*, 812, 88.
3. *Sub-kiloparsec Imaging of Cool Molecular Gas in Two Strongly Lensed Dusty, Star-Forming Galaxies*
    J. Spilker, M. Aravena, D.P. Marrone, et al., 2015, *Astrophysical Journal*, 811, 124.
2. *The Rest-Frame Submillimeter Spectrum of High-Redshift, Dusty, Star-Forming Galaxies*
    J. Spilker, D.P. Marrone, et al., 2014, *Astrophysical Journal*, 785, 149.
1. *ALMA Observations of SPT-Discovered, Strongly Lensed, Dusty, Star-Forming Galaxies*
    Y. Hezaveh, D.P. Marrone, C.D. Fassnacht, **J. Spilker**, et al., 2013, *Astrophysical Journal*, 767, 132.

Other Refereed Journal Articles

14. *An Amplified Dusty Star-forming Galaxy at z = 6: Unveiling an Elusive Population of Galaxies*
    J. Zavala et al., including **J. Spilker**, *Nature Astronomy*, in press.
13. *ISM Properties of a Massive Dusty Star-forming Galaxy Discovered at z~7*
    M. Strandet et al., including **J. Spilker**, 2017, *Astrophysical Journal*, 842, 15.
12. *ALMA Observations of Atomic Carbon in z~4 Dusty Star-forming Galaxies*
    M. Bothwell et al., including **J. Spilker**, 2017, *MNRAS*, 466, 2825.
11. *SPT0346-52: Negligible AGN Activity in a Compact, Hyper-starburst Galaxy at z=5.7*
    J. Ma et al., including **J. Spilker**, 2016, *Astrophysical Journal*, 832, 114.
10. *Persistent Asymmetric Structure of Sagittarius A* on Event Horizon Scales*
    V. Fish et al., including **J. Spilker**, 2016, *Astrophysical Journal*, 820, 90.
9. *The Redshift Distribution of Dusty Star Forming Galaxies from the SPT Survey*
    M. Strandet et al., including **J. Spilker**, 2016, *Astrophysical Journal*, 822, 80.
8. *An ALMA View of the Interstellar Medium of the z=4.77 Lensed Starburst SPT-S J213242-5802.9*
    M. Béthermin et al., including **J. Spilker**, 2016, *A&A*, 586, 7.
7. *Probing Star Formation in the Dense Environments of z~1 Lensing Halos Aligned with Dusty Star-Forming Galaxies Detected with the South Pole Telescope*
    N. Welikala et al., including **J. Spilker**, 2016, MNRAS, 455, 1629
6. *The Nature of the [CII] Emission in Dusty Star-Forming Galaxies From the SPT Survey*
    B. Gullberg et al., including **J. Spilker**, 2015, *MNRAS*, 449, 2883.
5. *SPT0538-50: Physical Conditions in the Interstellar Medium of a Strongly Lensed Dusty Star-forming Galaxy at z = 2.8*
    M. Bothwell et al., including **J. Spilker**, 2013, *Astrophysical Journal*, 779, 67.
4. *Extragalactic Millimeter-wave Point-source Catalog, Number Counts, and Statistics from 771deg^2 of the SPT-SZ survey*
    L. Mocanu et al., including **J. Spilker**, 2013, *Astrophysical Journal*, 779, 61.
3. *Large gas reservoirs and free-free emission in two lensed star-forming galaxies at z=2.7*
    M. Aravena et al., including **J. Spilker**, 2013, *MNRAS,* 433, 498.
2. *Dusty starburst galaxies in the early universe as revealed by gravitational lensing*
    J.D. Vieira et al., including **J. Spilker**, 2013, *Nature*, 495, 344.
1. *ALMA Redshifts of Millimeter-Selected Galaxies from the SPT Survey: The Redshift Distribution of Dusty Star-Forming Galaxies*
    A. Weiss et al., including **J. Spilker**, 2013, *The Astrophysical Journal*, 767, 88.

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Talks, Conferences, & Seminars

Invited Talks

4. *Invited review,* Plumbing Star Formation Rates in the Age of JWST, College Station, TX 30 October – 3 November 2017.
3. *Colloquium*, University of Texas at Austin, 18 September 2017
2. *Seminar*, Ohio State University CCAPP, 30 January 2017
1. *Invited talk*, ALMA Band 1 Workshop, ASIAA, Taipei, 16-18 January 2017

Contributed Conference Talks

6. 229th AAS Meeting, Grapevine, TX, 3-7 January 2017
5. A Half Decade of ALMA: Cosmic Dawns Transformed, Indian Wells, CA 20-23 September 2016
4. 227th AAS Meeting, Kissimmee, FL, 4-8 January 2016
3. South by High-Redshift, Austin, TX 1-3 April 2015
2. The Formation and Growth of Galaxies in the Young Universe, Obergurgl, Austria, 26-30 April 2014
1. Infrared and Submillimeter Probes of Gas in Galaxies, IPAC, Pasadena, CA 17-20 March 2013

Departmental Seminars and Other Talks

5. University of Texas at Austin Extragalactic seminar, 9/21/17
4. Harvard-Smithsonian Center for Astrophysics lunch talk, 12/11/15
3. UC-Berkeley Radio Astronomy Laboratory talk, 12/7/15
2. UC-Santa Cruz FLASH lunch talk, 12/4/15
1. NRAO Charlottesville TUNA lunch talk, 11/9/15