SAMANTHA SCIBELLI

Jansky Postdoctoral Fellow — National Radio Astronomy Observatory
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Research interests: Low-mass Star Formation, Radio Astronomy, Astrochemistry, Astrobiology

EDUCATION

University of Arizona — *August 2017 - August 2023*
Ph.D. in Astronomy & Astrophysics — *August 16, 2023*
Science Communication Certificate — *May 12, 2023*
M.S. in Astronomy & Astrophysics — *August 17, 2019*
Advisor: Dr. Yancy Shirley

Stony Brook University, Stony Brook, NY — *August 2013 - January 2017*
Bachelor of Science, Physics, second Major Astronomy — Magna Cum Laude
Women in Science and Engineering (WISE) Scholar

RESEARCH APPOINTMENTS

National Radio Astronomy Observatory (NRAO) — Charlottesville, VA
Jansky Postdoctoral Fellow — *August 2023 - present*

University of Arizona, Steward Observatory — Tucson, AZ
Graduate Research Assistant & NSF Fellow — *August 2017 - August 2023*

NASA Jet Propulsion Laboratory (JPL), Astrophysics Department — Pasadena, CA
NASA Sally Ride Fellow — *January 2017 - July 2017*

Harvard-Smithsonian Center for Astrophysics — Cambridge, MA
NSF REU Intern — *June 2016 - August 2016*

NASA Jet Propulsion Laboratory (JPL), Astrophysics Department — Pasadena, CA
NASA UI Intern — *August 2015 - December 2015*

Stony Brook University, Physics and Astronomy Department — Stony Brook, NY
Undergraduate Researcher — *December 2014 - January 2017*

Exploration in STEM Researcher — *June 2015 - August 2015*

Stony Brook University, Laser Teaching Center — Stony Brook, NY
Undergraduate Researcher — *February 2014 - May 2014*

Summer Research Intern — *July 2013 - August 2013*

Rensselaer Polytechnic Institute, Physics and Astronomy Department — Troy, NY
Visiting Student Researcher — *November 2010 - August 2014*

FELLOWSHIPS, HONORS AND AWARDS

2023: College of Science Graduate Student Teaching Award
2022-2023: P.E.O Scholar Award (PSA) for outstanding doctoral research
2022-2023 & 2021-2022: Advancing Science in America ARCS Foundation 'Lawson Scholar'
2021: Graduate Student Group Award 2021; SO Diversity, Equity and Inclusion Task Force
2020: Green Bank Observatory Blumberg Astrobiology Travel Grant
2019: Ed and Jill Bessey Scholarship in Astrobiology, University of Arizona
2017-2022: National Science Foundation Graduate Research Fellowship (NSF GRFP) Recipient
2016: Sigma Pi Sigma Physics Honor Society, Stony Brook University
2015: Researcher of the Month, Stony Brook University
2013: INTEL Science Talent Search (STS) Finalist

SELECTED TELESCOPE TIME OBTAINED, AS PI

Yebes 40m, Spring 2022: *COM Survey of 'Typical' Starless Cores in the Taurus, Perseus and Aquila Molecular Clouds*, 72 hrs
GBT, Special Call 2021: *QBand Chemical Complexity Survey of Prestellar Core L1544*, (>600 hrs)
GBT, 2020 B: *High Resolution C18O ARGUS Mapping toward Prestellar Cores in Taurus*, 20 hrs
SOFIA (joint with GBT), Cycle 9: *Far-IR Dust and Magnetic Field Alignment Study of the Collapse Candidate Starless Core L63*, 2.82 hrs (5.38 hrs on GBT)
GBT, 2020 B: *High Resolution C18O ARGUS Mapping toward Prestellar Cores in Taurus*, 20 hrs
ARO 12m, Spring 2020: *Complementary Zero-spacing Map for ALMA ACA Observations*, 74 hrs
ARO SMT, Spring 2020: *Novel J = (3-2) Molecular Mapping of the Dense B10 Region of Taurus*, 120 hrs
ALMA ACA Supplemental Call, Cycle 7: *Spatial Distribution of COMs within a Starless Core*, 19.8 hrs
ARO 12m, Fall 2019: *N-Bearing Complex Organic Molecules: A Survey of Prestellar Cores*, 350 hrs
IRAM 30m, Fall 2019: *High Resolution 1mm Continuum Study of the B10 Star Forming Region*, 17 hrs
ARO 12m, Spring 2019: *Survey of Highly Complex Organic Molecules in Young Prestellar Cores*, 350 hrs
ARO SMT, Fall 2018: *Mapping Inflow/Outflow Tracers in Massive Star-Forming Clumps*, 48 hrs
ARO 12m, Spring 2018: *A Deeper Look at Acetaldehyde in Prestellar Cores*, 210 hrs
ARO 12m, Fall 2017: *A Comprehensive Search for Methanol in Prestellar Cores*, 80 hrs

PUBLICATIONS

17 total refereed articles [ADS LINK] (9 first, second or third author)

Major Contributions:

17. *3D Radiative Transfer Modeling and Virial Analysis of Starless Cores in the B10 region of the Taurus Molecular Cloud*
Scibelli, S., Shirley, Y., et al., 2023 MNRAS, 521, 3

16. *The Rapidly Evolving Asymptotic Giant Branch Star, V Hya: ALMA Finds a Multiring Circus with High-velocity Outflows*
Sahai, R., Huang, P.-S., **Scibelli, S.**, et al. 2022, ApJ, 929, 59

15. *Detection of Complex Organic Molecules in Young Starless Core L1521E*
Scibelli, S., Shirley, Y., Vasyunin, A., et al., 2021 MNRAS, 504, 4

14. **A survey of CH2DOH towards starless and pre-stellar cores in the Taurus molecular cloud*
Ambrose, H., Shirley, Y., & **Scibelli, S.** 2021, MNRAS, 891, 1 *(student project)

13. *Prevalence of Complex Organic Molecules in Starless and Prestellar Cores within the Taurus Molecular Cloud*
Scibelli, S. & Shirley, Y., 2020, ApJ, 891, 1

12. *Biases in inferring dark matter profiles from dynamical and lensing measurements*
Scibelli, S., Perna, R., Keeton, C., 2019, MNRAS, 769

11. *High-Velocity Bullets from V Hydrae, an AGB Star in Transition: Ejection History and Spatio-Kinematic Modeling*
Scibelli, S., Sahai, R., & Morris, M. R., 2019, ApJ, 870, 117

10. *High-speed Bullet Ejections during the AGB-to-Planetary Nebular Transition: HST Observations of the Carbon Star, V Hydrae*
Sahai, R., **Scibelli, S.,** & Morris, M. R., 2016, ApJ, 827, 92

9. *Census of Blue Stars in SDSS DR8*
Scibelli, S., Newberg, H. J., Carlin, J.L., & Yanny, B., 2014, ApJS, 215, 24

Minor Contributions:

8. *Alignment of dense molecular core morphology and velocity gradients with ambient magnetic fields*
Pandhi, A., and 17 others including **Scibelli, S.**, 2023, MNRAS, 525, Issue 1, pp.364-392

7. *Velocity-Coherent Substructure in TMC-1: Inflow and Fragmentation*
Smith, S., and 13 others including **Scibelli, S.**, 2023, MNRAS, 519, Issue 1, pp.285-299

6. *A survey of deuterated ammonia in the Cepheus star-forming region L1251*
Galloway-Sprietsma, M., and 6 others including **Scibelli, S.**, 2022, MNRAS, 515, 5219

5. *Methanol Mapping in Cold Cores: Testing Model Predictions*
Punanova, A., and 7 others including **Scibelli, S.**, 2022, ApJ, 927, 213

4. *Relative alignment between dense molecular cores and ambient magnetic field: the synergy of numerical models and observations*
Chen, C.-Y., and 28 others including **Scibelli, S.**, 2020, MNRAS, 494, 1971

3. *Velocity-coherent Filaments in NGC 1333: Evidence for Accretion Flow?*
Chen, M. C.-Y., and 13 others including **Scibelli, S.**, 2020, ApJ, 891, 84

2. *Droplets. II. Internal Velocity Structures and Potential Rotational Motions in Pressure-dominated Coherent Structures*
Chen, H. H.-H., and 8 others including **Scibelli, S.**, 2019, ApJ, 886, 119

1. *Droplets. I. Pressure-dominated Coherent Structures in L1688 and B18*
Chen, H. H.-H., and 24 others including **Scibelli, S.**, 2019, ApJ, 877, 93

Media & Press:

· "Many Complex Organic Compounds –Evolved Building Blocks of Life — Are Formed Where Stars Are Being Born," Many Worlds Column, December 14, 2022

· "Ingredients for Life Appear in Stellar Nurseries Long Before Stars are Born," UofA News, June 11, 2020

· "COMs in Cores: Complex Chemistry in Dense Cores in the Taurus Star-Forming Region," astrobites article, March 16, 2020

· "Hubble Detects Giant 'Cannonballs' Shooting from Star," JPL news, October 6, 2016

CONFERENCES AND TALKS

Invited Talks (6):

· NRAO/UVa Joint Colloquium Series, September 28, 2022, Charlottesville, Virginia

· The NASA Astrobiology Program's Prebiotic Chemistry and Early Earth Environments (PCE3) Seminar Series, 1st December 2022, Virtual Zoom Talk

· Carnegie Observatories Lunch Talk, 20th January 2023, Pasadena, California

· NRAO Colloquium, 16th November 2022, Socorro, New Mexico

· K-Band Science Using the GBT, 19th – 21st Sep. 2022, Green Bank, West Virginia

· EAS Symposium SS15: Molecules in starless and pre-stellar cores: tools to understand low- and high-mass star-formation, June 28 - July 2, 2021, Virtual Zoom Conference

Contributed Talks (26):

· Kavli-IAU Astrochemistry Symposium, July 10-14, Traverse City, Michigan

· The 38th Annual New Mexico Symposium, Feb. 17, 2023, Socorro, New Mexico

· Dissertation Presentation for AAS 241st Annual Meeting, 8-12 Jan. 2023

· From Clouds to Planets II: The Astrochemical Link, Oct. 3-7, 2022, Berlin, Germany

· NRAO TUNA Lunch Series Talk, September 22, 2022, Charlottesville, Virginia

· COSPAR 44th Scientific Assembly Session, July 21, 2022, Athens, Greece

· Astrophysics Seminar, June 6, 2022, Jet Propulsion Laboratory, Pasadena, CA

· Leiden Astrochemistry Seminar, May 12, 2022, Virtual Zoom Talk

· Origins Seminar, May 9, 2022, Steward Observatory

· The 37th Annual New Mexico Symposium, Nov. 18, 2021, Virtual Zoom Conference

· Arizona Astrobiology Research Symposium, Nov. 12th, 2021, Virtual Zoom Conference

· ARCS Virtual Site Visit, Sep. 15th 2021, Virtual Zoom Meeting

· Wider and Deeper at Green Bank: The New Argus-144 Instrument, Sep. 22-24, 2020, Virtual Zoom Conference

· Origins Seminar, July 13th, 2020, Virtual Zoom Call

· Astrochemical Frontiers, June 15 - 19, 2020, Virtual Zoom Conference

· From Collapsing Cores to Forming Disks, March 10-13, 2020, NRAO headquarters, Charlottesville, VA [POSTPONED DUE TO COVID-19]

· The 35th Annual New Mexico Symposium, Feb. 2020, NRAO, Socorro, NM

· The Physics and Chemistry of the Interstellar Medium, 2-6 Sep. 2019, Avignon, France

· Astrochemistry: Past, Present, Future, Caltech, July 2018, Pasadena, CA

· NRAO TUNA Talk, Dec. 2018, Charlottesville, VA

· The Olympian Symposium 2018: gas and stars from milli- to mega- parsecs,
Mediterranean Village Hotel & Spa, Paralia, Keterini, Greece, May 2018

· The 33rd Annual New Mexico Symposium, NRAO, Socorro, NM, Nov. 2017

· SAO Summer Symposium, Center for Astrophysics, Cambridge, MA, Aug. 2016

· FLASH Talk, NOAO, January, 2019, Tucson, AZ

· Special Astrophysics Seminar, Jet Propulsion Laboratory, Pasadena, CA, Dec. 2015

· Physics and Nature Conference, Pace University, White Plains, NY, Nov. 2013

TEACHING EXPERIENCE

- Teaching Assistant for ASTR 300B: Radiation & Matter (Fall 2022)
- Teaching Assistant for ASTR 196: Astronomical Problem Solving (Fall 2022)
- Teaching Assistant for ASTR 202: Life in the Universe (Spring 2021)
- Teaching Assistant for ASTR 170B1: The Physical Universe (Fall 2020)
  - Designed a 'Science Journalism' module and taught mini-lectures for class

SCIENCE COMMUNICATION

Public Presentations:

- Public talk, "Space Brews: Probing the Origins of Complex Molecules with Radio Telescopes", given at 'Space Drafts' (Tucson's version of Astronomy On Tap) (April 19th, 2022)
- Public talk, "Mysteries of Molecular Clouds: Observing with Radio Telescopes," given for the Splendido Retirement Community (March 18th, 2022)
- Public talk for Knowledge Village (April 2021) - I presented a virtual talk about how I got interested in science and what I do as a graduate student to groups of middle-schoolers.

Popular Science Writing:

- News article, "Scientists: Too many satellites will hurt research," published on Dec 10, 2020 in Green Valley News, describes how satellite communication networks will negatively affect radio astronomy.
- News article, "UA graduate student studies the chatty life of covert squirrel," published in The Daily Wildcat, Dec 10, 2020.
- "A Witch to the Stars" memoir published July 15, 2020 on terrain.org describes my childhood and how I became interested in astronomy research.

COMMUNITY ENGAGEMENT

Mentoring & Outreach

- AMP-UP Mentor (2023) - I am mentoring a student applying for postdoctoral positions.
- NOIRLab Teen Astronomy Cafe Volunteer (throughout 2019-present) - I assist high school students in participating in hands on demonstrations, working on interative computer activities while they listen to presentations from the scientists at NOIRLab and other institutions.
- Astronomy Camp Counselor (June 2018,2019,2021,2022) - I've been employed as counselor to teach middle school and high school students about astronomy and get them interested in science and technology in general. I am in charge of SMT & 12m radio observing.
- TechPrep Mentor, Stony Brook University (Summer 2015) - I was employed as STEM summer camp counselor for middle school girls on Long Island.
- Volunteer as Mystery Women for Explore Your Opportunities (EYO) Conference (April 2014/2015) - I helped to educate 7th grade girls about STEM through interactive learning techniques in Bronx, NY.

Leadership & Service

Served as Journal Referee (ApJ; Oct. 2021 & July 2022, A&A; April 2021 & Aug. 2023)

Co-organizer for Steward Observatory Diversity, Equity and Inclusion Initiative (SO DEI), aimed at creating a more equitable department by implementing actionable changes through five major task forces. (2020-present)

Co-organizer for Steward Observatory's Diversity Journal Club (DJC), similar to a science journal club, were we discuss topics such as gender equity and diversity in the classroom (2018-present)

Served on the Steward Observatory Graduate Admissions Committee (2019/2020 season)

TECHNICAL SKILLS

Modeling and Analysis	RADMC-3D, RADEX, SHAPE
Software & Tools	Python, IRAF, Ds9, GILDAS, LaTex, HTML, Fortran, C++