BECKY NEVIN

COSMIC AI Postdoctoral Research Fellow
Fermilab National Accelerator Laboratory

https://beckynevin.github.io
rnevin@fnal.gov

EDUCATION

Ph.D. in Astrophysics, University of Colorado — June, 2019
Doctoral Thesis supervised by Julie Comerford:
"Kinematic Signatures of Galaxy Evolution: The Energetics of AGN Outflows and the Accurate Identification of Merging Galaxies"

M.S. in Astrophysics, University of Colorado — Nov, 2015

B.A. in Astrophysics, Whitman College — May, 2013

SKILLS

Technical — Deep learning, simulation-based inference, sampling, error analysis, statistics, analytical modeling, data visualization

Programming — Python, R, Unix/Linux, SQL, git, cloud computing, docker, high performance computing, parallelization

RESEARCH EXPERIENCE

Deepskies Lab Postdoctoral Research Fellow | Fermilab — 2022 - present
Uncertainty quantification, hierarchical Bayesian inference, and simulation based inference, software development

Postdoctoral Research Fellow | Harvard & Smithsonian CfA — 2019 - 2022
Multiwavelength Galaxy Evolution, Galaxy Simulations, and *Chandra* HRC

Graduate Research Assistant | University of Colorado — 2013 - 2019
Simulated Galaxy Imaging and Kinematics and AGN Outflows

Undergraduate Research Assistant | Harvard CfA — 2012
Recoiling Supermassive Black Holes

Undergraduate Research Assistant | Whitman College — 2011 - 2012
Globular Cluster Stellar Populations

Undergraduate Research Assistant | Institute for Astronomy, Maui — 2011
Spectropolarimeter Characterization

STUDENTS SUPERVISED

Aimee Schechter, 2019 - present, University of Colorado Graduate Student
Rohan Venkat, 2023 - present, Fermilab/UChicago

Sideena Grace, 2020, Banneker Institute Student (now at MIT)

REFEREED PUBLICATIONS

[19] *"The first quiescent galaxies in TNG300"*
Hartley, A. I., Nelson, E. J., Suess, K. A., Garcia, A. M., Park, M., Hernquist, L., Bezanson, R., **Nevin, R.**, Pillepich, A., Schechter, A. L., Terrazas, B. A., Torrey, P., Wellons, S., Whitaker, K. E., Williams, C. C., 2023, MNRAS, 522, 3138

[18] *"A declining major merger fraction with redshift in the local Universe from the largest-yet catalogue of major and minor mergers in SDSS"*
Nevin, R., Blecha, L., Comerford, J., Simon, J., Terrazas, B. A., Barrows, R. S., Vázquez-Mata, J. A., 2023, MNARS, 522, 1

[17] *"SDSS-IV MaNGA: The Incidence of Major Mergers in type I and II AGN Host Galaxies in the DR15 sample"*
Hernández-Toledo, H. M., Cortes-Suárez, E., Vázquez-Mata, J. A., **Nevin, R.**, Ávila-Reese, V., Ibarra-Medel, H., Negrete, C. A., 2023, MNRAS Accepted

[16] *"A Catalog of 71 Coronal Line Galaxies in MaNGA: [Ne V] Is an Effective AGN Tracer"*
Negus, J., Comerford, J. M., Müller-Sánchez, F., Revalski, M., Riffel, R. A., Bundy, K., **Nevin, R.**, Rembold, S. B., 2023, ApJ, 945, 127

[15] *"Towards a More Complete Optical Census of Active Galactic Nuclei, Via Spatially-Resolved Spectroscopy"*
Comerford, J. M., Negus, J., Barrows, R. S., Wylezalek, D., Greene, J. E., Müller-Sánchez, F., **Nevin, R.,** 2022, ApJ, 927, 23

[14] *"Spatially resolved star formation and inside-out quenching in the TNG50 simulation and 3D-HST observations"*
Nelson, E. J., Tacchella, S., Diemer, B., Leja, J., Hernquist, L., Whitaker, K. E., Weinberger, R., Pillepich, A., Nelson, D., Terrazas, B. A., **Nevin, R.**, Brammer, G. B., Burkhart, B., Cochrane, R. K., van Dokkum, P., Johnson, B. D., Marinacci, F., Mowla, L., Pakmor, R., Skelton, R. E., Speagle, J., Springel, V., Torrey, P., Vogelsberger, M. & Wuyts, S., 2021, MNRAS, 2068

[13] *"Evidence of Wind Signatures in the Gas Velocity Profiles of Red Geysers"*
Roy, N., Bundy, K., **Nevin, R.,** Belfiore, F., Yan, R., Campbell, S., Riffel, R. A., Riffel, R., Bershady, M., Westfall, K., Drory, N. & Zhang, K., 2021, ApJ, 913, 33

[12] *"Accurate Identification of Galaxy Mergers with Stellar Kinematics"*
Nevin, R., Blecha, L., Comerford, J., Greene, J. E., Law, D. R., Stark, D. V., Westfall, K. B., Vázquez-Mata, J. A., Smethurst, R., Argudo-Fernández, M., Brownstein, J. R., Drory, N., 2021, ApJ, 912, 45

[11] *"A Catalog of 406 AGNs in MaNGA: A Connection between Radio-mode AGNs and Star Formation Quenching"*

Comerford, J., Negus, J., Müller-Sánchez, F., Eracleous, M., Wylezalek, D., Storchi-Bergmann, T., Greene, J. E., Barrows, R. S., **Nevin, R.,** Roy, M., Stemo, A., 2020, ApJ, 901

[10] *"A Second Look at 12 Candidate Dual AGNs using BAYMAX"*
Foord, A., Gültekin, K., **Nevin, R.**, Comerford, J., Hodges-Kluck, E., Barrows, R., Goulding, A. & Greene, J., 2020, ApJ, 892, 29

[9] *"The Sixteenth Data Release of the Sloan Digital Sky Surveys: First Release from the APOGEE-2 Southern Survey and Full Release of eBOSS Spectra"*
The SDSS-IV Collaboration, **Nevin, R.**, 2019, ApJS, 249, 3

[8] *"Accurate Identifications of Galaxy Mergers with Imaging"*
Nevin, R., Blecha, L., Comerford, J. & Greene, J., 2018, ApJ, 872, 76

[7] *"The Origin of Double-Peaked Narrow Lines in Active Galactic Nuclei IV: Association with Galaxy Mergers"*
Comerford, J., **Nevin, R.**, Stemo, A., Müller-Sánchez, F., Barrows, R., Cooper, M. & Newman, J., 2018, ApJ, 867, 66

[6] *"Two Separate Outflows in the Dual Supermassive Black Hole System NGC 6240"*
Müller-Sánchez, F., **Nevin, R.**, Comerford, J., Davies, R., Privon, G. & Treister, E., 2018, Nature, 556, 345

[5] *"The Origin of Double-Peaked Narrow Lines in Active Galactic Nuclei III: Feedback from Biconical AGN Outflows"*
Nevin, R., Comerford, J., Müller-Sánchez, F., Barrows, R. & Cooper, M., 2018, MNRAS, 473, 2160

[4] *"An Active Galactic Nucleus Caught in the Act of Turning Off and On"*
Comerford, J., Barrows, R., Müller-Sánchez, F., **Nevin, R.**, Greene, J., Pooley, D., Stern, D. & Harrison, F., 2017, ApJ, 849, 102

[3] *"The Origin of Double-Peaked Narrow Lines in Active Galactic Nuclei II: Kinematic Classifications for the Population at $z < 0.1$"*
Nevin, R., Comerford, J., Müller-Sánchez, F., Barrows, R. & Cooper, M., 2016, ApJ, 832, 67

[2] *"The Origin of Double-Peaked Narrow Lines in Active Galactic Nuclei I: Very Large Array Detections of Dual AGNs and AGN Outflows"*
Müller-Sánchez, F., Comerford, J., **Nevin, R.**, Barrows, R., Cooper, M. & Greene, J., 2015, ApJ, 813, 2

[1] *"Calibrating and Stabilizing Spectropolarimeters with Charge Shuffling and Daytime Sky Measurements"*
Harrington, D., Kuhn, J. & **Nevin, R.**, 2015, Astronomy & Astrophysics, 578, 126

OTHER PUBLICATIONS

[4] *"Preparing an Inclusive Astronomy Community through Effective Professional Development"* McConnell, N, … **Nevin, R.**, …, 2019, Astro2020: Decadal Survey on Astronomy and Astrophysics, APC white paper

[3] *"The Early Career Perspective on the Coming Decade, Astrophysics Career Paths, and the Decadal Survey Process"* Moravec, E., … **Nevin, R.**, …, 2019, Astro2020: Decadal Survey on Astronomy and Astrophysics, APC white paper

[2] *"This Father's Day is One of the Longest Days in the History of the Earth - Here's Why"* **Nevin, R.**, 2015, Universe Today

[1] *"Going Above & Beyond: A Cross-Disciplinary Planetarium Program"* Rehnberg, M. & **Nevin, R.**, 2016, AAS Education Task Force White Paper

SUPERCOMPUTING ALLOCATIONS

Co-PI of XSEDE Supercomputer Allocation, NSF 2018
Allocated 1242000 CPU-hours

PI of JANUS/Summit Supercomputer Allocation, University of Colorado 2015
Allocated 200000 CPU-hours

OBSERVING EXPERIENCE

PI of six successful Apache Point Observatory Proposals 2014 - 2016
Dual Imaging Spectrograph, 3.5m ARC Telescope
Observed 34.5 half nights

Co-PI of MDM Observatory (Kitt Peak) Research 2012
Observed five nights

TEACHING EXPERIENCE

Instructor of Record, ASTR-1000 2017
University of Colorado
Developed and taught a 25 student course. Designed inquiry-based activities.

Professional Development Program (PDP) 2016
Institute for Scientists & Engineer Educators, University of California
Developed an inquiry-based exoplanet lab for first generation college students.

Teaching Assistant 2013 - 2014
University of Colorado
Taught lab courses (30 students) and assisted with interactive learning techniques for the large introductory classes.

Undergraduate Teaching Assistant and Tutor 2011 - 2013
Whitman College
Guided student telescope labs and indoor physics tutorials, led community outreach telescope nights, and gave planetarium shows to local schools

PROFESSIONAL DEVELOPMENT AND SERVICE

IDEA Sustainability Subcommittee, CfA	2020 - 2022
CfA director hiring committee, CfA	2021
Postdoc Council Member, CfA	2019 - 2021
Coursera Machine Learning	2019 - 2021
Datacamp Data Science Courses in Python	2019 - 2021
Astro 2020 Decadal Survey Position Paper Coauthor	2018-2019
Referee, MNRAS, ApJ, A&A	2018 - present
Statistical Learning, Stanford Online	2018 - present
Mentorship Training, University of Colorado	2018
Rethinking Scientific Presentations: The Assertion-Evidence Approach	2018
Running Singularity Containers on SDSC's Comet Supercomputer	2018
Managing Research Workflows with Singularity Containers	2018
Software Carpentry Workshop, Research Computing	2017
Science Writing Course, University of Colorado	2016
Elected Comps I Committee Member, University of Colorado	2015
Astrostatistics Summer School, Penn State	2015
Faculty Hiring Committee Member, University of Colorado	2014

PRESS COVERAGE

Supermassive Black Hole Documentary Film 2018 - 2022
Writing and narrating an educational movie about supermassive black holes and galaxy mergers in partnership with the Fiske Planetarium.

SDSS Press Conference Jan 2019
Took part in a press release and press conference at the 233rd AAS meeting, release text is available on the SDSS website.

PhD Comics 2016
Research group featured in *Supermassive Black Holes Explained* (http://www.phdcomics.com/comics.php?f=1864)

OUTREACH & COMMUNICATION

Created paper summaries and comic overlays for the deepskies group 2022 - present
Assisted research group members in creating concise and accessible paper summaries and associated art - check them out on linkedin or twitter

Lunch Break: Conversations with Scientists in Industry 2020 - 2021
Organized a weekly lunch series at the CfA that welcomes astrophysicists

who are working in industry to share their career journey [youtube].

Science Speak-Easy: Science Communication Workshop 2018 - 2019
Organized and facilitated an annual workshop for graduate students and postdocs at University of Colorado on giving public and scientific talks.

The Science of Sci Fi 2017 - 2019
Developed and ran this talk series at Fiske Planetarium, aimed at engaging the public with popular sci fi works.
My talk: *Zombie Pathology: A Survival Guide for Pandemics in the 21st Century*

Science and Society 2014 - 2019
Ran this talk series at Fiske Planetarium, helped graduate students and postdocs develop talks
My talks: *It Came from Space! The Solar System's Ultimate Weapon and How we Hope to Stop it, Galactic Getaways: Life from a Different Perspective*

Promoting an Inclusive Community in Astronomy (PICA) 2013 - 2019
Organized and led discussions of this graduate-student run diversity group

Astronomy on Tap: Colorado 2016 - 2017
My talks: *Gravitational Waves, The Dino's Demise*

Science Writer 2013 - 2017
Wrote for the blog *Cosmic Conversations*, communicated a wide range of popular science topics

ComSciCon 2015
Attended this science communication conference preparing today's scientists to better communicate their science to a broader audience

Earth Explorers 2014 - 2015
Worked with a group of underserved middle schoolers in Longmont, CO to develop a movie about black holes