Evan Santos Scannapieco **Nov. 15, 2024**

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Education

1996-2001	UC Berkeley	Physics MS (adv. Joseph Silk) & PhD (adv. Marc Davis)
	Dissertation:	The Role of Heating and Enrichment in Structure Formation
1992-1996	Harvard Univ.	Physics A.B., *magna cum laude*

Academic Appointments

2018-present	Professor	ASU School of Earth and Space Exploration (SESE)
2018-2021	Program Manager	Astrophysics Division, NASA Headquarters
2013-2018	Associate Professor	ASU School of Earth and Space Exploration
2007-2013	Assistant Professor	ASU School of Earth and Space Exploration
2003-2007	Postdoctoral Member	University of California, Santa Barbara, Kavli Institute for Theoretical Physics
2001-2003	NSF Distinguished International Postdoctoral Research Fellow Arcetri Observatory, Italy, and Paris Institute of Astrophysics, France	

Research Summary

I carry out large numerical simulations and compare them with observations from ground and space-based telescopes to develop a better understanding of galaxy formation and the evolution of the elements across cosmic time.

Federal Grants

A total of $4,694,075 in research funding awarded as PI or co-PI/co-Investigator at ASU.

2024-2027 **NASA Astrophysics Decadal Survey Precursor Science: Robustly Modeling the Evolution of Galactic Winds in Realistic Large-scale Simulations**
Awarded Amount: $744,409 (100% Credit)

This project will use supercomputer simulations to study galactic winds and their interaction with the circumgalactic medium. It will make use of a unique subgrid model to include parsec-scale magnetic fields, thermal conduction, and cosmic ray physics in cosmological-scale simulations. The results will be publicly released to aid the development of future NASA Great Observatories.

2023-2026 **NASA XRISM Guest Scientist Program: Disentangling the Phases of the M82 Outflow with Nonequilibrium Simulations**
Awarded Amount: $124,365 (100% Credit)

XRISM is a joint Japanese Aerospace Exploration Agency (JAXA) and NASA mission to measure the X-ray-emitting universe in unprecedented spectral resolution. We are combining

XRISM observations of the outflowing galaxy M82 with detailed numerical simulations to analyze the relationship between different temperature phases in the galaxy superwind.

2023-2026 **Space Telescope Science Institute: A Systematic Search for Wind-CGM Interactions in Star-forming Galaxies**
Awarded Amount: $651,525 (25% Credit)

Galactic superwinds play a pivotal role in galaxy formation. This program combines Hubble Space Telescope observations of the circumgalactic medium (CGM) of 42 galaxies and a suite of non-equilibrium chemistry simulations to provide new insights into wind-CGM interactions.

2022-2025 **NASA Theory: Modeling the Rise and Fall of the First Stellar Generation During the Epoch of Reionization**
Awarded Amount: $424,084 (100% Credit)

This study aims to better understand why the earliest stellar generation has never been detected. To unravel this mystery, we developed a unique code that combines turbulence models with radiative transfer and are comparing our simulations with a wide range of observational clues.

2017-2021 **NSF-AAG: Following the Turbulent Enrichment of the High-Redshift Universe**
Awarded Amount: $503,163 (100% Credit)

This project studied enrichment from early stars using advanced numerical simulations that included mixing, chemistry, and radiative transfer. We used these results to interpret observations of heavy-element-poor stars, as well as to guide the development of future telescope missions.

2017-2020 **NASA Theory: Making Great Galaxy Formation Simulations**
Awarded Amount: $472,397 (20% Credit)

This project improved models of the circumgalactic medium (CGM), the atmosphere that surrounds each galaxy. Our team implemented a new algorithm to model galaxy-wind CGM interactions, better connecting observations with underlying physical processes.

2015-2019 **NASA Theory: The Next Generation of Tools for Simulating Galaxy Outflows**
Awarded Amount: $497,228 (100% Credit)

This comprehensive numerical study of galaxy outflows consisted of a suite of simulations that deepened our understanding of key microphysical processes in galaxy outflows and allowed us to develop more accurate tools for galaxy-scale simulations.

2015-2018 **NSF-IRES: Measuring Cosmic Magnetism with the Low Frequency Radio Array**
Awarded Amount: $248,212 (100% Credit)

This collaboration between ASU and Hamburg University used the Low Frequency Array (LOFAR) to study cosmic magnetism. The grant provided hands-on international research experience to eighteen ASU undergraduate and graduate students who used LOFAR's unique capabilities to make magnetic field measurements at unprecedented sensitivity.

2014-2017 **NSF-AAG: Using the Sunyaev-Zel'dovich Effect to Measure AGN Feedback**

Awarded Amount: $498,199 (100% Credit)

The Sunyaev-Zeldovich effect is the spectral distortion of the cosmic microwave background by hot intergalactic gas. Our group analyzed data from two microwave telescopes to measure this effect and ran simulations using three codes to interpret it. This resulted in unique constraints on the impact of heating from active black holes on the history of galaxy evolution.

2011-2014 NSF-AAG: Simulating Galaxy Formation with Fewer than a Trillion Zones
Awarded Amount: $486,798 (100% Credit)

This was the first project to develop subgrid models of high Reynolds-number turbulence in galaxy evolution. The models were applied to study active black holes, globular clusters, and supernova-driven outflows. The project also included public lectures, course development, and the release of simulation packages to the scientific community.

2011-2014 NASA Theory: Colliding and Merging White Dwarfs
Awarded Amount: $366,000 (50% Credit)

For this study, our group conducted the first suite of numerical simulations of the collisions and mergers of white dwarf stars as possible progenitors of Type Ia supernovae (SNeIa). This enabled us to refine our understanding of SNeIa progenitors so that they can be better used for future cosmology studies like those being planned for the upcoming Roman Space Telescope.

2010-2013 NASA Earth and Space Science Fellowship: White Dwarf Collisions as a Unique Pathway for Supernovae
Awarded Amount: $90,000 (100% Credit)

This proposal funded Cody Raskin's PhD research on the collisions of white dwarf stars as potential supernova sources. Using numerical simulations, the study examined various collision scenarios, establishing trends and making observational predictions. Dr. Raskin subsequently became a Staff Scientist at Lawrence Livermore National Laboratory.

2010-2014 NSF-IRES: Studying Galactic and Intergalactic Magnetism with LOFAR
Awarded Amount: $149,408 (100% Credit)

This collaboration between ASU and Hamburg University used the Low Frequency Array (LOFAR) to study cosmic magnetism. The project provided hands-on international research experience for twelve ASU students, and it was extended by a follow-up IRES project in 2015.

2010-2012 NASA Theory: Self-Enrichment of Primordial and Present-day Star Clusters
Awarded Amount: $474,437 (50% Credit)

For this project, our group carried out simulations of the chemical changes that occur after stars form and enrich their surroundings. The work focused on the conversion of molecular clouds into open clusters and generated predictions useful for interpreting a wide range of observations.

2008-2011 NSF-AAG: Constraining Double Degenerate Mergers
Awarded Amount: $501,260 (50% Credit)

This project used multi-dimensional simulations and advanced statistics to analyze merging white dwarfs as possible progenitors of Type Ia supernovae (SNeIa) The interdisciplinary research served to train young scientists and produced public codes for improved modeling of SNeIa, contributing to our understanding of these crucial cosmological distance indicators.

Conference and Workshop Organization

2025 **The Eighth Joint Japan Aerospace Exploration Agency (JAXA)-NASAX-Ray Imaging and Spectroscopy Mission (XRISM) Team Meeting**
Arizona State University, Tempe, AZ
Science & Local Organizing Committee Chair

2023 **Oases in the Cosmic Desert: Understanding the Structure of the Circumgalactic Medium Conference**
Arizona State University, Tempe, AZ
Science & Local Organizing Committee Co-Chair

2021 **Eighth Annual Giant Magellan Telescope Community Science Meeting: Black Holes at All Scales**
Sedona, AZ
Science Organizing Committee Member

2019 **Turbulent Life of Cosmic Baryons Workshop**
Aspen Center for Physics, Aspen, CO
Lead Organizer

2019 **Joint Institute for Nuclear Astrophysics Workshop on R-process Sources in the Universe**
Arizona State University, Tempe, AZ
Science Organizing Committee Member

2019 **Seventh Annual GMT Community Science Meeting: The Cosmic Baryon Cycle: Gas and Galaxies**
Catalina Island, CA
Science Organizing Committee Member

2018 **Simulating Line Emission from Galaxies Workshop**
Arizona State University, Tempe, AZ
Science Organizing Committee Member

2013 **Turbulence in Cosmic Structure Formation Conference**
Arizona State University, Tempe, AZ
Science Committee Chair

Selected Lectures, Colloquia, and Public Talks Since 2014

08/2024 Turbulence in the Circumgalactic Medium
Toward a Holistic Understanding of the Circumgalactic Medium Workshop, Aspen Center for Physics, Aspen, CO

06/2024 The Evolution of Turbulent Fluctuations
Intracluster Medium Theory & Computation Workshop, Ann Arbor, MI

06/2024 Inclusion and Mentoring for Habitable Worlds Observatory
3rd START/TAG Face-to-Face Meeting, Baltimore, MD

03/2024 Turbulence and the Evolution of the Multiphase Circumgalactic Medium
Turbulence in the Universe, KITP, Santa Barbara, CA

03/2024	Inclusion and Mentoring for Habitable Worlds Observatory 2nd START/TAG Face to Face Meeting, Pasadena, CA
02/2024	Seven "Don'ts" and One "Probably" I learned from Lars Bildsten Stars with Lars Workshop, KITP, Santa Barbara, CA
09/2023	What Governs the Density Evolution of Turbulent Media? MIST2023: Cosmic turbulence and Magnetic fields, Cargèse, France
03/2023	Constraining Feedback and Dust at z >1 using Microwave Observations The Cosmic Web: Connecting Galaxies to Cosmology, KITP, Santa Barbara, CA
12/2022	Disentangling the Hot and Cold Phases of the M82 Outflow with Nonequilibrium Simulations XRISM Core-to-Core Multiwavelength Workshop, Tsukuba, Japan
11/2022	Why Did the Most Massive Galaxies Stop Forming Stars? SESE Colloquium, ASU, Tempe, AZ
10/2022	Data-Driven Modeling Understanding NASA SMD Needs for Data and Computing, Greenbelt, MD
10/2022	The Invisible Halo Around Galaxies SESE New Discoveries Lecture, ASU, Tempe, AZ
09/2022	Constraining CGM Structure with the Sunyaev Zel'dovich Effect What Matter(s) Around Galaxies Conference, Chompoluc, Italy
08/2022	Constraining the Thermal History of Groups and Clusters with the Sunyaev-Zel'dovich Effect 6th ICM Theory and Computation Workshop, Copenhagen, Denmark
04/2022	Why Did the Most Massive Galaxies Stop Forming Stars? Astrophysics Colloquium, Hamburg University, Germany
03/2022	Why Did the Most Massive Galaxies Stop Forming Stars? Physics and Astronomy Colloquium, University of Southern California
12/2021	The Astrophysics Theory Program Inclusion Plan Pilot NASA Science Mission Directorate Management Council, Washington, DC
11/2021	NASA Fellowship and Funding Opportunities in Astrophysics SACNAS National Diversity in STEM (NDiSTEM) Digital Conference
03/2021	The Astrophysics Division Inclusion Task Force Astrophysics Advisory Committee (FACA Committee)
01/2021	NASA Fellowship and Funding Opportunities in Astrophysics American Astronomical Society, Virtual Conference
11/2020	NASA Fellowship and Funding Opportunities in Astrophysics National Society of Black Physicists, Virtual Conference
02/2020	The NASA Astrophysics Theory Program Astro 2020 Decadal Review, Enabling Foundation for Research Panel, National Academy of Sciences, Washington, DC
10/2019	The Impact of Turbulence and Nonequilibrium Chemistry on the CGM Circumgalactic Medium 2019, Berlin, Germany

06/2019	Turbulence and Outflows in High-surface Density Galaxies The Turbulent Life of Cosmic Baryons, Aspen, CO
01/2019	The Rise and Fall of Galaxies Astrophysics Colloquium, University of Virginia, Charlottesville, VA
10/2018	SZ Predictions and Considerations for ToLTEC TolTEC Workshop, University of Massachusetts, Amherst, MA
07/2018	Turbulence in the Circumgalactic Medium Intergalactic Interconnections Conference, Marseille, France
06/2018	Constraining AGN Feedback With the Sunyaev-Zel'dovich Effect Massive black holes in evolving galaxies Conference, Paris, France
06/2018	The Search for Pop III-bright Galaxies Rise and Shine Conference, Strasbourg, France
05/2018	Understanding Turbulence-Regulated Star Formation as a Markov Process Interstellar: The Matter Meeting, Cozumel, Mexico
05/2018	Nonequilibrium Signatures of Galactic Feedback Simons Symposium on Galactic Superwinds, Schloss Elmau, Germany
04/2018	Signatures of Turbulence in High-redshift Galaxies Interstellar Medium of High-redshift Galaxies Workshop, Garching, Germany
03/2018	The Rise and Fall of Galaxies University of Victoria, Physics and Astronomy Colloquium, Victoria, Canada
03/2018	The Rise and Fall of Galaxies NRC Herzberg Inst. of Astrophysics, Astrophysics Seminar, British Colombia, Canada
03/2018	The Rise and Fall of Galaxies University of British Colombia, Astrophysics Colloquium, Vancouver, Canada
12/2017	Do we Understand Feedback and its Impact on Galaxy Evolution? Dark Matters Conference in Honor of Joseph Silk, Paris, France
11/2017	The Fate of Gas-rich Satellites in Clusters Clusters of Galaxies Workshop: Physics and Cosmology, Bern, Switzerland
11/2017	Developing More Inclusive Science Books for Young Children ASU STEM Equity Exchange Brown Bag Lunch, Tempe, AZ
11/2017	The Timescales of Cosmic Turbulence Society for Literature, Science, and the Arts, Annual Meeting, ASU, Tempe, AZ
09/2017	Studying High-Redshift Star Formation with the Giant Magellan Telescope Giant Magellan Telescope Community Science Meeting, Tarrytown, NY
09/2017	The 2017 Solar Eclipse Mathew Blades Radio Show, Mix 96.9
09/2017	The 2017 Solar Eclipse AZ Central, Facebook Live Video
06/2017	The Origin of Cold Gas in Starburst and AGN-Driven Winds

	European Week of Astronomy and Space Science, Prague, Czech Republic
06/2017	Why Aren't the Biggest Galaxies Forming Stars? What Matters Around Galaxies Conference, Durham, United Kingdom
08/2016	Metal Mixing in the Presence of a Magnetic Field Intracluster Medium Workshop, Fine Center, Univ. Minnesota, Minneapolis, MN
08/2016	Signatures of Turbulence in High-redshift Galaxies Cloudy: Emission Lines in Astrophysics Symposium, Mexico City, Mexico
07/2016	Cold Gas in Galaxy Outflows The Cold Universe KITP Workshop, Santa Barbara, CA
07/2016	Why Aren't the Biggest Galaxies Forming Stars? Kavli Institute for Theoretical Physics, Chalk Talk, Santa Barbara, CA
04/2016	The Launching of Cold Gas by Galaxy Outflows Simons Symposium on Galactic Superwinds, Schloss Elmau, Germany
03/2016	Why Did the Most Massive Galaxies Stop Forming Stars? Saguaro Astronomy Club, Phoenix, AZ
02/2016	Why Did the Most Massive Galaxies Stop Forming Stars? ASU Night of the Open Door, Tempe, AZ
01/2016	Building a Research Program Panelist Discussion, ASU, Tempe, AZ
08/2015	Atomic Chemistry in Turbulent Astrophysical Media IAU FM 18: Scale-free Processes in the Universe, Honolulu, HI
08/2015	Stellar Explosions in High-surface Density Galaxies IAU FM 10: Stellar Explosions in an Ever-changing Environment, Honolulu, HI
07/2015	The Launching of Cold Gas by Galaxy Outflows The Metal Enrichment of Diffuse Gas in the Universe Conf., Sexten, Italy
09/2014	Turbulence in Galaxy Formation Theoretical Astrophysics Colloquium, University of Arizona, Tucson, AZ
06/2014	Cold Gas in Galaxy Outflows Gravity's Loyal Opposition KITP Workshop, Santa Barbara, CA
03/2014	Physical Coupling of Winds to the Turbulent Interstellar Medium Simons Symposium on Galactic Super Winds: Beyond Phenomenology, Puerto Rico
02/2014	Modeling the Pollution of Pristine Gas Near-field Deep-Field Connection, UC Irvine, CA
01/2014	Feedback and Turbulence in Galaxy Formation Theoretical Astrophysics Seminar, UC Berkeley, CA

Awards & Fellowships

2021 **NASA HQ Honor Award**

Awarded for advancing NASA's core value of inclusion by restructuring the Astrophysics Research Program to remove barriers to the participation of underrepresented groups.

2019 **NASA HQ Honor Award**

Awarded for successfully executing the astrophysics theory and computational research program on schedule and meeting all metrics following the government shutdown.

2019 **Dr. Manuel Servín Faculty Award**

Awarded yearly to an ASU faculty member who exemplifies achievement in research, mentorship of Hispanic students, leadership, and community service.

2007 **Ontario Research and Innovation Optical Network (ORION), Discovery Award of Merit**

Awarded for conducting the largest cosmological simulation containing gas ever carried out.

2006 **Aspen Center for Physics, Martin & Beate Block Award**

Awarded to the most promising young physicist attending a Winter Conference at the Aspen Center for Physics

2001 **NSF-Distinguished International Postdoctoral Research Fellowship**

Awarded to carry out a research program on interactions between galaxies and the intergalactic medium at the Arcetri Observatory in Italy and the Institute for Astrophysics in Paris.

2001 **UC Berkeley, Elizabeth Uhl Award**

Awarded for outstanding scholarly achievement by a graduate student close to finishing their dissertation in Astronomy or Physics.

1999 **UC Berkeley, Chancellors Opportunity Predoctoral Fellowship**

Provides a full year of funding support for exceptional graduate students in STEM fields.

1996 **NSF Graduate Research Fellowship**

Provides three years of funding support to outstanding STEM graduate students.

1996 **UC Berkeley, Roy L. Frank Fellowship**

Provides a full year of funding support for an exceptional incoming physics graduate student.

Selected Publications

Publication Summary

- 140 refereed publications spanning the fields of cosmology, large-scale structure, galaxy formation, active galactic nuclei, star formation, and supernovae.
- Citations: 5888 NASA Astrophysics Data System (ADS), 8265 Google Scholar
- h-index: 44 ADS, 52 Google Scholar

Refereed Publications

(underline indicates undergraduate or PhD student and *italics* indicate postdoc working under my supervision)

[140] Understanding Density Fluctuations in Supersonic, Isothermal Turbulence
E.Scannapieco, L. Pan E. Buie II, and M. Brüggen, 2024, *Science Advances,* in press

[139] The imprint of magnetic fields on absorption spectra from circumgalactic wind-cloud Systems
B. Casavecchia, W. E. Banda-Barragán, M. Brüggen, F. E. Brighenti, and **E. Scannapieco** 2024, *Astronomy & Astrophysics*, Volume 689, 127, pp. 26

[138] The Hydrodynamic Response of Small-scale Structure to Reionization Drives Large IGM Temperature Fluctuations that Persist to z = 4
C. Cain, **E. Scannapieco**, M. McQuinn, A. D'Aloisio, and H. Trac, 2024, *Monthly Notices of the Royal Astronomical Society (MNRAS)*, 533, L100, pp. 7

[137] Distinguishing Active Galactic Nuclei Feedback Models with the Thermal Sunyaev-Zel'dovich Effect
S. Grayson, **E. Scannapieco**, and R. Davé, 2023, *Astrophysical Journal (ApJ),* 957, 17, pp. 12

[136] Constraining Circumgalactic Turbulence with QSO Absorption Line Measurements
B. Koplitz, E. Buie II, and **E. Scannapieco**, 2023, *ApJ,* 956, 54, pp. 12

[135] Evidence of Extended Dust and Feedback around z ≈ 1 Quiescent Galaxies via Millimeter Observations
J. Meinke, S. Cohen, J. Moore, K. Böckmann, P. Mauskopf, and **E. Scannapiec**o, 2023, *ApJ*, 954, 119, pp. 21

[134] The Launching of Cold Clouds by Galaxy Outflows. V. The Role of Anisotropic Thermal Conduction
M. Brüggen, **E. Scannapieco**, and P. Grete, 2023, *ApJ,* 951, 113, pp. 14

[133] The Effects of Radiative Feedback and Supernova-induced Turbulence on Early Galaxies
R. Sarmento and **E. Scannapieco**, 2022, *ApJ*, 935, 174, pp. 10

[132] Modeling Photoionized Turbulent Material in the Circumgalactic Medium. III. Effects of Corotation and Magnetic Fields
E. Buie II, **E. Scannapieco**, and G. Mark Voit, 2022, *ApJ* l, 927, 30, pp. 16

[131] A New Model for Including Galactic Winds in Simulations of Galaxy Formation II: Implementation of PhEW in cosmological simulations
S. Huang, N. Katz, J. Cottle, **E. Scannapieco**, R. Davé, & D. H. Weinberg 2022, *MNRAS,* 509, 609, pp. 23

[130] The Thermal Sunyaev-Zel'dovich Effect from Massive, Quiescent 0.5 ≤ z ≤ 1.5 Galaxies
J. Meinke, K. Böckmann, S. Cohen, P. Mauskopf, **E. Scannapieco**, R. Sarmento, E. Lunde, & J. Cottle, *ApJ,* 913, 88, pp. 23

[129] Shock--multicloud interactions in galactic outflows - II. Radiative fractal clouds and cold gas thermodynamics
W. Banda-Barragán, M, Brüggen, V. Heesen, **E. Scannapieco**, J. Cottle, C. Federrath, & A. Y. Wagner 2020, *Monthly Notices of the Royal Astronomical Society,* 506, 5658, pp. 20

[128] The Launching of Cold Clouds by Galaxy Outflows IV: Cosmic-Ray-Driven Acceleration

M. Brüggen & **E. Scannapieco** 2020, *ApJ*, 905, 18, pp. 14

[127] Shock--multicloud interactions in galactic outflows - I. Cloud layers with log-normal density distributions
W. Banda-Barragán, M, Brüggen, C. Federrath, A. Y. Wagner, **E. Scannapieco**, & J. Cottle 2020, *MNRAS,* 499, 2173, pp. 23

[126] Limits to Rest-Frame Ultraviolet Emission from Far-Infrared-Luminous z > 6 Quasar Hosts
M. Marshall, M. Mechtley, R. A. Windhorst, S. H. Cohen, R. A. Jansen, V. R. Jones, J. S. B. Wyithe,, X. Fan, N. P. Hathi, K. Jahnke, L. Jiang, W. C. Keel, A. M. Koekemoer, V. Marian, J. Robinson, H. Röttgering, R. E. Ryan, Jr., **E. Scannapieco**, D. P. Schneider, G. Schneider, B. M. Smith, M. A. Strauss, & H. Yan 2020, *ApJ*, 900, 21, pp. 22

[125] A New Model for Including Galactic Winds in Simulations of Galaxy Formation I: Introducing the Physically Evolved Winds (PhEW) Model
S. Huang, N. Katz, **E. Scannapieco**, J. Cottle, R. Davé, D. H. Weinberg, J. A. Kollmeier, & M. S. Peeples 2020, *MNRAS,* 498, 2586, pp. 21

[124] Modeling Photoionized Turbulent Material in the Circumgalactic Medium II: Effect of Turbulence within a Stratified Medium
E. Buie, **E. Scannapieco**, W. J. Gray, & *M. Safarzadeh* 2020, *ApJ,* 893, 136, pp. 24

[123] The Launching of Cold Clouds by Galaxy Outflows III: The Influence of Magnetic Fields
J. Cottle, **E. Scannapieco**, M. Brüggen, W, Banda-Barragán, & C. Federrath, 2020, *ApJ*, 892, 59, pp. 15

[122] Modeling Observations of Absorption Lines in the Circumgalactic Medium with a Turbulent Medium
E. Buie, M. Fumagalli, & **E. Scannapieco** 2020, *ApJ,* 890, 33 pp. 19

[121] Magnetic helicity dissipation and production in an ideal MHD code
A. Brandenburg, **& E. Scannapieco** 2020, *ApJ*, 889, 55, pp. 9

[120] Catastrophic Cooling in Galaxy Outflows: Line Emission and Nonequilibrium Ionization
W. J. Gray, M. S. Oey, S. Silich, & **E. Scannapieco** 2019, *ApJ*, 887, 161, pp. 17

[119] Warped diffusive radio halo around the quiescent spiral edge-on galaxy NGC 4565
V. Heesen, L. Whitler, P. Schmidt, A. Miskolczi, S. S. Sridhar, R. Beck, G. Gurkan, **E. Scannapieco**, & M. Bruggen 2019*, A&A,* 628, 3, pp. 9

[118] Measuring the Delay Time Distribution of Binary Neutron Stars II: Using the Redshift Distribution from Third-Generation Gravitational Wave Detectors
M. Safarzadeh, E. Berger, K.-Y. Ng, H.-Y. Chen, S. Vitale, C. Whittle, **E. Scannapieco** 2019, *ApJ,* 878, 13, pp. 9

[117] On Neutron Star Mergers as the Source of r-process Enhanced Metal-Poor Stars in the Milky Way
M. Safarzadeh, R. Sarmento, & **E. Scannapieco** 2019, *ApJ,* 876, 28, pp. 10

[116] Non-equilibrium Ionization States within Galaxy Outflows: Explaining Their OVI and NV Columns Densities
W. J. Gray, **E. Scannapieco**, & M. D. Lehnert 2019, *ApJ*, 875, 110, pp. 12

[115] r-process Enrichment of Ultra-Faint Dwarf Galaxies by Fast Merging Double Neutron Stars

M. Safarzadeh, E. Ramirez-Ruiz, J. J. Andrews, P. Macias, T. Fragos, & **E Scannapieco**, 2019 *ApJ,* 872, 105, pp. 9

[114] Hot X-ray Atmospheres, Molecular Gas, and AGN Feedback in Early Type Galaxies: A Topical Perspective
N. Werner, B. R. McNamara, E. Churazov, & **E. Scannapieco,** 2019, *Space Science Reviews,* 215, 5, pp. 48

[113] Astrophysics with the Spatially and Spectrally Resolved Sunyaev-Zeldovich Effects: A Millimetre/Submillimetre Probe of the Warm and Hot Universe
T. Mroczkowski, D. Nagai, K. Basu, J. Chluba, J. Sayers, R. Adam, E. Churazov, A. Crites, L. Di Mascolo, D. Eckert, J. Macias-Perez, F. Mayet, L. Perotto, E. Pointecouteau, C. Romero, F. Ruppin, **E. Scannapieco**, J. ZuHone 2019, *Space Science Reviews,* 215, 17, pp. 60

[112] Following the Cosmic Evolution of Pristine Gas III: The Observational Consequences of the Unknown Properties of Population III Stars
R.Sarmento, **E Scannapieco**, and B. Côté 2019, *ApJ,* 871, 206, pp. 18

[111] Calibrating the low-frequency radio–SFR relation in nearby galaxies at 1-kpc scale with LOFAR
V. Heesen, E. Buie II, CJ Huff, L. A. Perez, J. G. Woolsey, D. A. Rafferty, A. Basu, R. Beck, E. Brinks, C. Horellou, **E. Scannapieco**, M. Brüggen, R.-J. Dettmar, K. Sendlinger, B. Nikiel-Wroczynski, K. T. Chyzy, P. N. Best, G.H. Heald, & R. Paladino, 2019 *A&A*, 662, 8, pp. 23

[110] Using Real and Simulated Measurements of the Thermal Sunyaev-Zel'dovich Effect to Constrain Models of AGN Feedback
A. Spacek, M. Richardson, **E. Scannapieco,** J. Devriendt, Y. Dubois, S. Peirani, & C. Pichon 2018, *ApJ*, 865, 109, pp. 12

[109] Understanding Star-Formation as a Markov Process
E. Scannapieco & *M. Safarzadeh* 2018, *ApJL,* 865, 14, pp. 5

[108] Modeling Photoionized Turbulent Material in the Circumgalactic Medium
E. Buie, W. J. Gray, & **E. Scannapieco** 2018, *ApJ,* 864, 114, pp. 10

[107] Column Density Profiles of Cold Clouds Driven by Galactic Outflows
J. Cottle, **E, Scannapieco**, & M. Brüggen 2018, *ApJ,* 864, 96, pp. 14

[106] A Limit on the Warm Dark Matter Mass From the Redshifted 21cm Absorption Line
M. Safarzadeh, **E. Scannapieco,** & A. Babul 2018, *ApJL,* 859, 18, pp. 5

[105] Selecting Ultra-faint Dwarf Candidate Progenitors in Cosmological N-body Simulations at High Redshifts
M. Safarzadeh, A. P. Ji, G. A. Dooley, A. Frebel, **E. Scannapieco,** F. A Gómez, B. W. O'Shea 2018, *MNRAS,* 476, 5006, pp. 9

[104] Following the Cosmic Evolution of Pristine Gas II: The Search for Pop III-Bright Galaxies
R. Sarmento, **E. Scannapieco**, & S. Cohen 2018, *ApJ*, 854, 75, pp. 13

[103] The Fate of Gas-Rich Satellites in Clusters
M, Safarzadeh, & **E. Scannapieco** 2017, *ApJ*, 850, 88, pp. 7

[102] The Effect of Turbulence on Nebular Emission Line Ratios
W. J Gray & **E. Scannapieco** 2017, *ApJ*, 849, 132, pp.11

[101] Constraining the Properties of Neutron Star Mergers by Simulating r-process Element Production in Ultra-Faint Dwarf Galaxies
M, Safarzadeh, & **E. Scannapieco** 2017, *MNRAS,* 471, 2088-2096

[100] The Production of Cold Gas Within Galaxy Outflows
E. Scannapieco 2017, *ApJ,* 837, 28, pp. 17

[99] Numerical Simulation of Star Formation by the Bow Shock of the Centaurus A Jet
C. Gardner, J. Jones, **E. Scannapieco,** & R. A. Windhorst, 2017, *ApJ*, 835, 232, pp. 9

[98] Searching for Fossil Evidence of AGN Feedback in WISE-Selected Stripe-82 Galaxies by Measuring the Thermal Sunyaev-Zel'dovich Effect with the Atacama Cosmology Telescope
A. Spacek, **E. Scannapieco,** S. Cohen, B. Joshi, & P. Mauskopf 2017, *ApL*, 834, 102, pp. 16

[97] Following the Cosmic Evolution of Pristine Gas I: Implications for Milky Way Halo Stars
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Courses Taught

AST 111: Intro. to Astronomy I: Discovering the Solar System (2008, 2009, 2013)

An introductory survey of our modern understanding of the Sun, the Solar System, and the astronomical tools and concepts used to study them. The course is designed for both non-science and science students and focuses on conveying the excitement of studying the Solar System.

AST 112: Intro. to Astronomy II: Stars, Galaxies, and Cosmology (2011, 2012, 2015, 2022)

An introductory survey of our modern understanding of stars, galaxies, and the universe. It is a companion course to AST 112 and, like that course, it is structured to be accessible to a wide range of students and convey the excitement of scientific discovery.

SESE 122/124: Earth, the Solar System and the Universe II (2017)

An introduction to modern astronomy, geology, and planetary science. The course forms a solid foundational core for degrees in Earth and Exploration by seeking answers to the questions: How do we explore? What is the scientific method? and How is modern science carried out?

AST 301: Physics of Astrophysics (2023, 2024)

This online course introduces students to critical physical and mathematical concepts for contemporary astrophysics, including: electromagnetic interactions, gravity and motion, interactions between light and matter, and the nuclear forces responsible for powering stars.

AST 421: Upper Division Astrophysics I (2012, 2016)

This is the first of two courses designed to build the physics knowledge needed to prepare students for potential careers in astrophysics. The course covers classical mechanics, gravity, relativity, electrodynamics, and basic plasma physics.

AST 422: Upper Division Astrophysics II (2009, 2014, 2016, 2023)

The second course in the AST 421/422 series covers quantum mechanics, statistical mechanics, thermodynamics, nuclear physics, and fluid dynamics. Students also learn to deliver a short scientific talk in the style of an American Astronomical Society (AAS) presentation.

AST 498/591: Topical Seminar: The James Webb Space Telescope (2021)

This introduction to the James Webb Space Telescope (JWST) took place the semester before the mission was launched. It covered JWST's instruments, including NIRCam, NIRSpec, and MIRI, and its science targets, including the early universe, forming stars, and exoplanet atmospheres.

AST 521: Graduate Level Radiative Processes in Astrophysics (2010, 2022)

This graduate course focuses on the propagation of radiation throughout the universe. Key topics include the fundamentals of radiative transfer, stellar and planetary atmospheres, bremsstrahlung, atomic and molecular structure, synchrotron radiation, Compton scattering, and plasma physics.

AST 531: Graduate Level Galactic Dynamics (2007, 2009, 2011, 2015, 2017)

This graduate course explores the fields of galaxy structure, dynamics, and evolution. Topics covered include galaxy types, stellar processes, Milky Way's structure, orbital mechanics, dynamical instabilities, globular clusters, black holes, and active black holes.

GLG/ENG/MAT 591: High-Performance Computation for Space and Environmental Flows (2010)

I co-taught this interdisciplinary seminar course with Prof. Alex Mahalov in SoMSS. It featured a broad range of ASU-led research that uses large numerical simulations to study multiphase flows in natural settings, fostering discussion and building new interdepartmental collaborations.

SES 598: Introduction to Radio Astronomy (2018)

This graduate course provides a comprehensive introduction to radio astronomy, covering the fundamental principles of radiative transfer, the physical sources of radio emission, and the instrumentation used in the field, including radio telescopes and interferometers.

Postdoctoral Advisees

		Current Position
Mohammad Safarzadeh	2016-2019	Postdoctoral Scholar at UC Santa Cruz
Sharanya Sur	2012-2015	Assoc. Prof., Indian Institute of Astrophysics
Liubin Pan	2009-2012	Assoc. Professor, Sun Yat Sen University
Themis Athanassiadou	2009-2012	Support Engineer, Atlassian

Graduate Advisees

Maliyah Adams	1st year Masters Student	
Skylar Grayson	4th year PhD Student	
Edward Buie II	PhD in 2022	Asst. Professor at Vassar College
J'Neil Cottle	PhD in 2021	Data Scientist at Cascade Data Labs
Richard Sarmento	PhD in 2018	System Architect at IRIDIUM
Alexander Spacek	PhD in 2017	Postdoc at Los Alamos National Laboratory
Mark Richardson	PhD in 2014	Education and Outreach Officer, Queens Univ.
William Gray	PhD in 2012	Scientist at 3M Corporation
Cody Raskin	PhD in 2011	Staff Scientist at Lawrence Livermore Nat. Lab

Graduate Student Awards

Skylar Grayson	2022	NSF Graduate Fellowship
Edward Buie II	2020	College Student Leader Recognition Award
	2017-2021	NSF Graduate Fellowship
	2016	ASU Doctoral Enrichment Fellowship
Mark Richardson	2013	Balzan Visiting Junior Research Fellowship

	2011-2014	National Sciences and Engineering Research Council of Canada Grant
Cody Raskin	2010	NASA Earth and Space Science (NESSF) Fellowship
	2010	Annual Meeting of Nobel Laureates, Invitee

Undergraduate Advisees

Lilly Whitler	Grad 2020	PhD Student, University of Arizona
Victoria Jones	Grad 2020	PhD Student, University of Arizona
Thomas Tyburczy	Grad 2020	Lunar Recon Orbiter Research Technician, ASU
Cameron White	Grad 2019	PhD Student, University of Arizona
Cierra Huff	Grad 2020	PhD Student, ASU
Gabriella Huckabee	Grad 2019	PhD Student, UC Santa Cruz
Jacob Woosley	Grad 2018	Failure Analysis R&D Engineer, Intel
Kezman Saboi	Grad 2018	PhD Student, ASU
Dustin Nguyen	Grad 2017	PhD Student, Ohio State University
Stephanie Stawinski	Grad 2017	PhD Student, UC Irvine
Trevor Van Engelhoven	Grad 2017	Patent Analyst, Global Patent Solutions
Michael Busch	Grad 2016	NSF Graduate Research Fellow, John Hopkins
James Cornelison	Grad 2015	PhD Student, Harvard University
Diane Van Hoy	Grad 2015	Teacher, Mesa Public Schools
Michael Falcon	Grad 2015	Test Engineer, Mercury Systems
Miguel Bueno	Grad 2014	Test Engineer, Compound Photonics
Stuart Spackman	Grad 2014	Research Associate, Ventana Medical Systems
Amanda Wilber	Grad 2014	Postdoc, Curtin University
Jon Van der Water	Grad 2013	Lead Flight Director, Challenger Space Center
Michael Falcon	Grad 2013	Test Engineer, Freescale Semiconductor
Zelong Yu	Grad 2013	Software Engineer, Microsoft
Devon Powell	Grad 2013	Postdoc, Max Plank Inst. For Astrophysics
Holly Hutchison	Grad 2013	ISS Payload Integration Manager, Boeing

Administrative Appointments

2023-Present **Habitable Worlds Observatory (HWO) Science, Technology, Architecture Review Team Member (START)**
NASA Science Mission Directorate

As a member of the leadership team selected to prepare for the Habitable Worlds Observatory (HWO), I am guiding the development of the next NASA Astrophysics Great Observatory after the James Webb Space Telescope and the upcoming Roman Space Telescope. I serve on the START working group for galaxy evolution, which is defining science cases for the instruments being developed for HWO. I am also co-chair of the START working group for inclusion and mentoring, which is developing sustainable partnerships with a diverse range of institutions and supporting the careers of the future scientists who will benefit from the observatory.

2024-Present **Embark Pilot Program Co-Lead**
Arizona State University

Embark is a Joint Design Fund pilot program conceived by ASU VP for Inclusive Excellence Amalia Pallares and funded by the Gates Foundation. As Embark co-lead, I work with Prof.

Susannah Sandrin to provide mentorship, writing support, and presentation skills to sixteen undergraduate students in preparation for the 2024 SACNAS conference. The pilot project is dedicated to addressing student equity gaps in STEM, with a particular focus on underrepresented communities including Black, Hispanic, Indigenous, and economically disadvantaged students.

2021-Present **SESE Associate Director for an Inclusive Community**
Arizona State University

As Associate Director for Inclusive Community, I lead the implementation of the multi-year plan for making the SESE more inclusive. Highlights from my work include: tracking and improving student enrollment and retention rates for underrepresented groups, leading the development of a SESE Code of Conduct, implementing individual development plans to improve graduate student mentoring, establishing a permanent Inclusive Community Committee, writing several funded seed grants to better support students, and working with the SESE leadership team to bring the Heising-Simons Foundation 51 Pegasi b Fellowship to ASU.

2018-Present **Science Advances Associate Editor**
American Association for the Advancement of Science

Science Advances is the largest open-access publication in the Science family of journals, with high-impact articles spanning all science areas. As Associate Editor, I work closely with a multidisciplinary team of active scientists, and I am responsible for editorial decisions across Atmospheric Science, Astrophysics, Fluid Dynamics, and Heliophysics.

2022-2023 **Hispanic Research Center (HRC) Faculty Advisory Committee**
Arizona State University

The Hispanic Research Center (HRC) is a leading institution for the advancement of knowledge and understanding of Hispanic communities at ASU. The Faculty Advisory Committee played a crucial role in guiding the Center's relaunch under the leadership of Dr. Stella Rouse, and I worked with this group to evaluate the center's activities, identify areas for improvement, and provide recommendations on how to best serve the broader community of students and faculty.

2018-2021 **Program Manager for the Theoretical and Computational Astrophysics Networks (TCAN) and Astrophysics Theory (ATP) Programs**
NASA Science Mission Directorate

As the Program Manager for TCAN and ATP, I directed all theoretical and computational astrophysics programs at NASA headquarters. This included managing the budget that provides roughly half of all US federal funding for theoretical and computational astrophysics, carrying out peer reviews involving over 150 panelists, and working closely with staff to ensure all grants were properly administered. Additional accomplishments included shifting the ratio of male to female reviews from more than 4:1 to less than 2:1, presenting to oversight committees established by the Federal Advisory Committee Act and the National Academy of Sciences, and collaborating with NSF program officers to improve coordination between agencies.

2020-2021 **Astrophysics Research and Analysis Program Deputy Program Manager**
NASA Science Mission Directorate

As Deputy Lead for the NASA Astrophysics Research and Analysis (R&A) Program, I worked with the Astrophysics Division Director and R&A Lead to set the priorities for the Division's research investments. These span all areas of computation, theory, observation, laboratory work, and technology development, totaling approximately $100M per year of investments.

2020-2021 **Project Scientist for NASA Neal Gehrels Swift Observatory**
NASA Science Mission Directorate

The Neal Gehrels Swift Observatory is a space-based observatory that generates rapid-response observations to fast-breaking events, including gamma-ray bursts, variable stars, and the electromagnetic counterparts of gravitational wave sources. As Project Scientist, I administered the mission science operations for Swift, managed the guest observer-led investigations, and assessed project performance against program-level requirements, schedule, and budget. During my tenure as the Project Scientist, Swift was ranked as one of the most successful astrophysics missions operated by NASA.

2018-2021 **Astrophysics Program Manager for Future Investigators in NASA Earth and Space Science and Technology (FINESST)**
NASA Science Mission Directorate

As the Astrophysics Program Manager for FINESST, I worked to pioneer NASA's new program to support graduate student-led research in astrophysics. FINESST replaced NASA's Earth and Space Science Fellowship (NESSF), and it streamlined the budgetary and oversight process, including mentoring plans to ensure healthy working relationships between advisors and students. During my tenure as the FINESST Program Manager, NASA doubled the number of astrophysics awards given yearly.

2020-2022 **Astrophysics Lead of NASA High-End Computing Allocation Board**
NASA Science Mission Directorate

NASA's High-End Computing (HEC) Program delivers comprehensive supercomputing resources and services to both universities and NASA centers. As the astrophysics lead of the HEC Allocation Board, I managed the computing time and storage allocations for all of the Division grants and missions and provided strategic planning for NASA Ames Research Center's future computational investments.

2020-2021 **Astrophysics Program Manager for NASA Artificial Intelligence / Machine Learning Task Force**
NASA Science Mission Directorate

As the Astrophysics Program Manager of the Artificial Intelligence/Machine Learning (AI/ML) task force, I evaluated how NASA's Science Mission Directorate can better adopt AI/ML to accelerate scientific progress. This included assessing AI/ML capabilities and needs, carrying out a community-wide workshop, and shaping future strategic investments across all NASA science.

2020-2021 **Chair of NASA Astrophysics Division Inclusion Task Force**
NASA Science Mission Directorate

As the Chair of the NASA Astrophysics Inclusion Task Force, I managed the overhaul of the division's processes for soliciting and evaluating proposals. By coordinating with a diverse group of outside stakeholders, we removed barriers for underrepresented groups to ensure that our nation's most talented scientists benefit from NASA's Astrophysics programs.

2018-2019 **Faculty Liaison and Board Member, Chicano/Latino Faculty & Staff Association (CLFSA)**
Arizona State University

The CLFSA supports and advocates for the Chicano/Latino community at ASU by educating university administrators, faculty, staff, and students on the policies, issues, and challenges that most affect this group. As faculty liaison and board member, I collaboratively managed the association business, planned outreach and fundraising events, and represented faculty concerns to the wider ASU community.

2017-2018 **Astrophysics Lead for the School of Earth and Space Exploration (SESE) Heptennial Review Committee**
Arizona State University

As the Astrophysics Lead for the SESE Heptennial Review, I coordinated the review and overhaul of the School's teaching and research portfolio, funding and budgetary profile, and administrative structures and processes. Key outcomes of the review included the prioritization of new hires across faculty and staff, updating degrees and courses, and the establishment of an Associate Director for an Inclusive Community.

2009-2017 **Working Group for Research Computing**
Arizona State University

As a member of ASU's Working Group for Research Computing, I help to advise and manage the development of the university's high-performance computational investments across all research fields and disciplines.

Departmental and College Service

2007-pres	Physics Department Graduate Faculty
2024	César E. Chávez Leadership Institute
2022-2024	Member, SESE Promotion and Tenure Committee
2023	Member, ASU Presidential Postdoctoral Fellowship Committee
2018-2020	Member, Laura Rendón Scholarship Committee
2017-2018	Member, Committee to Establish the ASU Online Bachelor of Science Degree in Astronomical and Planetary Sciences
2016-2018	Member, SESE Promotion and Tenure Committee
2015-2018	Chair, SESE Awards Committee
2010-2018	PI and Lead, LOFAR International Research Experience for Students Program
2014-2015	Member, SESE Undergraduate Curriculum Committee
2011-2013	Chair, SESE Computing Committee
2010-2011	Member, SESE Articulation Task Force
2008-2011	Member, SESE Graduate Recruitment Committee
2008-2009	Member, Committee to Establish the ASU In Person Bachelor of Science Degree in Earth and Space Exploration
2007-2009	Interdisciplinary Science and Technology Building IV Planning Committee

National and International Service

2013-pres	Reviewer for Nature
1997-pres	Reviewer for The Astrophysical Journal
1997-pres	Reviewer for Monthly Notices of the Royal Astronomical Society
1997-pres	Reviewer for Physical Review D
2023	External Reviewer, Hubble Space Telescope Time Allocation Committee

2018	External Reviewer, NSF International Research Experience for Students (IRES)
2016-2018	National Science Bowl Question Reviewer
2003-2018	External Reviewer, US-Israeli Binational Science Foundation
2016	Panel Chair, NASA Theory Grant Panel
2016	Grand Award Judge, Intel International Science and Engineering Fair
2016	Panelist, NSF Astronomy and Astrophysics Grants Program
2015	Panelist, NSF International Research Experience for Students (IRES) Program
2014	Panelist, NSF Mid-Scale Innovations Program (MSIP) Panelist
2014	External Reviewer, UK Royal Society University Research Fellowships
2013	Panelist, NSF, Astronomy and Astrophysics Grants Program
2012	Panel Chair, NASA Theory Grant Panel
2011-2017	External Reviewer, Korean Ministry of Ed., Sci., & Tech. Grants
2011	Panelist, NSF Astronomy and Astrophysics Grants Program
2009-2012	Judge, Student Cluster High-Performance Computation Competition
2010	Panelist, NSF Astronomy and Astrophysics Grants Program
2009	Panel Chair, NSF Astronomy and Astrophysics Grants Program
2008-2012	External Reviewer, Dutch National Vidi Research Incentives
2008	Panel Chair, NSF Astronomy and Astrophysics Grants Program
2007	Panelist, NSF Astronomy and Astrophysics Grants Program
2005	Panelist, NSF Astronomy and Astrophysics Grants Program

Professional Memberships and & Community Involvement

1998-pres	Member, American Astronomical Society
2016-pres	Member, ASU Chicano/Latino Faculty & Staff Association
2019-2022	Board Member, Harvard Club of Washington D. C.
2017-2018	Board Member, Harvard Club of Phoenix