
EVAN SCHNEIDER

Department of Physics and Astronomy
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(US Citizen)

Research focus: galaxy formation and evolution with an emphasis on computational techniques

EDUCATION

University of Arizona, Tucson, Arizona

Ph.D. May 2017 - Astronomy & Astrophysics

Doctoral Thesis Title: *Revealing the Physics of Galactic Winds through Massively-Parallel Hydrodynamics Simulations*

Advisor: Dr. Brant Robertson

M.S. August 2012 - Astronomy

Bryn Mawr College, Bryn Mawr, Pennsylvania 2006-2010

B.A. - Mathematics, Physics

summa cum laude, with Honors in Physics

EMPLOYMENT AND RESEARCH EXPERIENCE**Assistant Professor**

Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA 2020 - present

NASA Hubble / Lyman Spitzer, Jr. Postdoctoral Fellow

Department of Astrophysical Sciences, Princeton University, Princeton, NJ 2017 - 2020

Adjunct Professor

Department of Astronomy, Pima Community College, Tucson, AZ 2017 - 2017

Ph.D. Candidate

Steward Observatory, The University of Arizona, Tucson, AZ 2012 - 2017

Advisor: Dr. Brant Robertson

Masters Student

Steward Observatory, The University of Arizona, Tucson, AZ 2010 - 2012

Advisor: Dr. Chris Impey

Undergraduate Thesis Student

Bryn Mawr College, Bryn Mawr, PA 2009-2010

Advisor: Dr. Peter Beckmann

Smithsonian Astrophysical Observatory REU

Harvard-Smithsonian Center for Astrophysics, Cambridge, MA Jun. 2009 - Aug. 2009

Advisors: Dr. Andrea Dupree, Dr. Nancy Brickhouse

National Radio Astronomy Observatory REU

National Radio Astronomy Observatory, Charlottesville, VA Jun. 2008 - Aug. 2008

Advisor: Dr. Scott Ransom

SELECTED FELLOWSHIPS AND AWARDS

Packard Fellowship, David and Lucile Packard Foundation, 2022

Nicolas Metropolis Computational Physics Dissertation Award, American Physics Society, 2019

Hubble Fellowship, Princeton University, 2017

Lyman Spitzer, Jr. Fellowship, Princeton University, 2017

Einstein Fellowship, The Ohio State University (declined), 2017

College of Science Graduate Student Research Prize, University of Arizona, 2015

Theoretical Astrophysics Program Graduate Student Research Prize, University of Arizona, 2014

NSF Graduate Research Fellowship, University of Arizona, 2011

Gertrude Slaughter Fellowship, Bryn Mawr College, 2010

Elizabeth S. Shippen Scholarship in Science, Bryn Mawr College, 2009

GRANTS (TOTAL \$1.615M)

- (2022-2027), **PI**, Packard Fellowship \$875k
“Enabling a New Era of Astrophysics Simulations”
- (2022-2025), **PI**, NASA-ATP-80NSSC22K0720 \$334k
“From Feedback to Galactic Winds: The ISM-Halo Connection”
- (2022-2023), **PI**, HST-AR-16633, \$48k Pitt (\$127k total)
“Unlocking the Potential of Galactic Outflow Observations”
- (2021-2024), **Institutional PI**, NASA-TCAN-80NSSC21K0271, \$279k
“Simulating Cosmic Reionization Beyond the Current State-of-the-Art”
PI: Nicolai Gnedin

PROFESSIONAL EXPERIENCE

Software Development

Cholla: Primary code architect and developer, *Cholla* hydrodynamics code
url: <http://github.com/cholla-hydro/cholla>

Computational

Oak Ridge National Lab – *Frontier*: TBD (CAAR Program, Application PI) 2022
Oak Ridge National Lab – *Summit*: 390,000 node hours (INCITE program Ast175, co-PI) 2022
Oak Ridge National Lab – *Summit*: 50,000 node hours (CAAR Program, Application PI) 2019 - 2021
Oak Ridge National Lab – *Rhea*: 5,000 node hours (DDT program Ast125 Data Extension, PI) 2019
Oak Ridge National Lab – *Titan*: 46 million core-hours (INCITE program Ast125, co-PI) 2018
Oak Ridge National Lab – *Titan*: 46 million core-hours (INCITE program Ast125, co-PI) 2017
Stanford – *XStream*: 90,000 SUs (XSEDE program Ast 160039, co-PI) 2016
Oak Ridge National Lab – *Titan*: 6 million core-hours (DDT programs Ast 107 & 119, co-I)
 Experience with C, C++, CUDA C, IDL, Python

Observing

MMT – Hectospec: 1 night
Magellan – MMIRS: 2 nights
Green Bank Telescope: 1 night

Service

Union of Pitt Faculty Bargaining Committee member, Spring 2022 - present
 Pitt Physics and Astronomy Dept. Graduate Student Academic Advisor (Astronomy track), 2021 - present
 Pitt Physics and Astronomy Dept. Diversity Equity and Inclusion Committee, 2020 - present
 Oak Ridge Leadership Computing Facility Users Group Executive Board member, 2018 - present
 Galaxy Winds Workshop Organizer (SOC), Johns Hopkins University, Aug. 2021
 Princeton Astrophysics Department Climate Committee member, Spring 2018 - Spring 2020
 Princeton Astrophysics Colloquium Series Co-Organizer, academic year 2018 - 2019
 Princeton Astrophysics Science Coffee discussion leader (Mondays), academic year 2017 - 2018
 Princeton Astrophysics SFIR seminar Co-Organizer, academic year 2017 - 2018
 Graduate Admissions Committee Member, University of Arizona Astronomy Department, Jan. 2014
 Graduate Council Member, University of Arizona Astronomy Department, 2012 - 2014
 Prospective Graduate Student Visit Coordinator, University of Arizona Astronomy Department, Mar. 2013
 Referee: The Astrophysical Journal, MNRAS
 Reviewer:
 NESSF, FINESST (2018, 2019)
 NASA ATP (2020, 2021)
 German Research Foundation (2021)
 HST Time Allocation Committee (2020, 2021, 2022)

Professional Development

GPU Technology Conference, Mar. 2018, 2019
 Argonne Training Program on Extreme Scale Computing, Aug. 2016
 Supercomputing 2015 Conference & Tutorials, Nov. 2015
 International High Performance Computing Summer School, Jun. 2014

Membership: AAS, ACM, SIAM

TEACHING AND ADVISING EXPERIENCE

- Ph.D. Advisor
 - Helena Richie, University of Pittsburgh, expected graduation: May 2026
 - Orlando Warren, University of Pittsburgh, expected graduation: Dec. 2024
 - Robert Caddy, University of Pittsburgh, expected graduation: May 2024
- Undergraduate Research Advisor
 - Hannah Leary, University of Pittsburgh, expected graduation: May 2025
 - Sofi Fortis, University of Pittsburgh, expected graduation: Dec. 2022
- Co-advisor: Lita de la Cruz, Princeton astrophysics post-baccalaureate student
- Professor, University of Pittsburgh
 - Astronomy 3101 - Graduate Introduction to Astrophysics, Fall 2022*
 - Astronomy 1121 - Galaxies and Cosmology, Spring 2022*
 - Astronomy 013/413 - Introduction to Astrophysics / Honors, Fall 2020, Fall 2021*
- Lecturer, Kavli Summer School in Plasma Physics, Flatiron Institute, Jun. 2019
- COMPASS Seminar Lecture, Princeton University, Apr. 2019
- Lecturer, LSST Data Science Fellows program, Apr. 2019
- Instructor, Pima Community College, Summer 2017
 - Sole instructor for a ~30 student section of Astronomy 101. Course included twice weekly lectures, as well as a weekly lab component.*
- Guest Lectures for Graduate and Undergraduate Courses
 - Princeton University - AST 542 - Astrophysical Fluids, May 2019*
 - University of Pittsburgh - ASTRON 0113 - Introduction to Astronomy, Nov. 2018*
 - University of Arizona - ASTR 296A - Topics in Astronomical Research, Apr. 2017*
 - University of Arizona - ASTR 400B - Galactic and Extragalactic Astrophysics, Feb. 2014*
- Teaching Assistant, University of Arizona, Spring 2017
 - Sole teaching assistant for the ~30 student Physics 305 Computational Physics course taught by Dr. Philip Pinto. Lectured six times, assisted with in-class assignments, held office hours, and graded coding assignments.*
- Teaching Assistant, University of Arizona, Fall 2014
 - Sole teaching assistant for a ~150 student section of Astronomy 170B taught by Dr. Don McCarthy. Led study sessions, held office hours, and lectured on occasion.*
- Recitation Leader, Bryn Mawr College, Fall 2008 / Spring 2009
 - Led study sessions for the undergraduate Physics 101/102 course twice a week, creating lesson plans and worksheets, and giving students one-on-one assistance when requested.*
- Physics Lab TA, Bryn Mawr College, Fall 2007, Spring 2008, Fall 2009
 - Monitored introductory physics lab, answering student questions, grading labs.*
- Peer Tutor, Bryn Mawr College, 2007 - 2010
 - Tutored students one-on-one once or twice a week in physics or calculus.*

COMMUNITY ACTIVITIES AND OUTREACH

- Union of Pitt Faculty Organizing Committee member, 2021
 - Princeton Prison Teaching Initiative Instructor, Fall 2019, Spring 2020
 - Astronomy on Tap Austin Speaker, Oct. 2019
 - Astronomy on Tap Pittsburgh Speaker, Nov. 2018
 - Astronomy on Tap Chicago Speaker, Jul. 2018
 - Solar Eclipse Outreach Day, Aug. 2017
 - Space Drafts (Astronomy on Tap Tucson) Co-Organizer, Spring 2015 - Summer 2017
 - University of Arizona Astronomy Graduate Mentoring Program Coordinator, Fall 2014 - Spring 2017
 - University of Arizona Student Fees Committee Member, 2012 - 2014
 - Regular Author and Editorial Board member, Astrobites Blog, 2011 - 2014
 - Expanding Your Horizons Science Workshop, Fall 2011, Spring 2011, Spring 2012, Fall 2013
 - University of Arizona Graduate and Professional Student Council, College of Science Representative, 2011 - 2013
 - University of Arizona Library Advisory Council Member, 2011 - 2013
 - Tucson Women in Astronomy Undergraduate Mentoring Coordinator, 2011 - 2012
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SELECTED CONFERENCES AND TALKS*43 invited, 55 total, 8 international*

- ngVLA Conference, Flatiron Institute, *invited review talk*, Jun. 2022
 - Wolfe Symposium, Esalen, *invited talk*, Mar. 2022
 - Astronomy Colloquium, UC Santa Cruz (virtual), *invited talk*, Feb. 2022
 - APEC Seminar, Kavli IPMU, University of Tokyo (virtual), *invited talk*, Feb. 2022
 - Astronomy Colloquium, University of Athens (virtual), *invited talk*, Nov. 2021
 - Astronomy Colloquium, University of Virginia / NRAO, *invited talk*, Oct. 2021
 - OLCF Users Meeting, Oak Ridge National Laboratory (virtual), *invited talk*, Jun. 2021
 - SIAM minisymposium (virtual), *invited talk*, Mar. 2021
 - KITP workshop tutorial (virtual), *invited talk*, Feb. 2021
 - CGI Seminar, UCSC (virtual), *invited talk*, Oct. 2020
 - Multiphase Gas Conference, KITP (virtual), *invited talk*, Oct. 2020
 - Astronomy Colloquium, University of Illinois Urbana Champagne (virtual), *invited talk*, Sep. 2020
 - Astrophysics Colloquium, Princeton University (virtual), *invited talk*, June 2020
 - Astronomy Colloquium, Durham University (virtual), *invited talk*, May 2020
 - Astrophysics Seminar, Princeton Institute for Advanced Study, *invited talk*, Mar. 2020
 - KICP Seminar, University of Chicago, *invited talk*, Jan. 2020
 - Frank N. Bash Symposium, UT Austin, *invited talk*, Oct. 2019
 - Astronomy Colloquium, Columbia University, *invited talk*, Oct. 2019
 - Berlin CGM Conference, MPA, *invited talk*, Oct. 2019
 - Physics Colloquium, Haverford College, *invited talk*, Sep. 2019
 - Theoretical Astrophysics Seminar, University of Florida, *invited talk*, Aug. 2019
 - Rising Stars in Computational Science Conference, UT Austin, *invited talk*, Apr. 2019
 - Hubble Fellows symposium, Space Telescope Science Institute, *invited talk*, Mar. 2019
 - Astrophysics Seminar, Rutgers University, *invited talk*, Apr. 2019
 - GPU Technology Conference Presentation, San Jose, *invited talk*, Mar. 2019
 - Nicholas Metropolis Award Presentation, APS Boston Meeting, *invited talk*, Mar. 2019
 - Astronomy Seminar, Michigan State University, *invited talk*, Dec. 2018
 - Astro lunch talk, Carnegie Mellon University, *invited talk*, Nov. 2018
 - Physics Colloquium, Amherst College, *invited talk*, Oct. 2018
 - Astronomy Colloquium, Carnegie Observatories, *invited talk*, Oct. 2018
 - Ciera CGM workshop, Northwestern University, *invited talk*, Jul. 2018
 - Bangalore Bubbles Conference, IISc India, contributed talk, Jun. 2018
 - OLCF Users Meeting, Oak Ridge National Laboratory, *invited talk*, May 2018
 - LANL astrophysics seminar, Los Alamos National Laboratory, *invited talk*, Apr. 2018
 - SFIR seminar, Princeton University, Apr. 2018
 - Hubble Fellows symposium, Space Telescope Science Institute, *invited talk*, Mar. 2018
 - AAS dissertation talk, Grapevine TX, Jan. 2017
 - Lunch seminar, Center for Computational Astrophysics, Flatiron Institute *invited talk*, Nov. 2016
 - TAPIR seminar, Caltech, *invited talk*, Oct. 2016
 - IMPS seminar, University of California Santa Cruz, *invited talk*, Oct. 2016
 - TAP seminar, University of California Berkeley, *invited talk*, Oct. 2016
 - ITC Galaxy and Cosmology seminar, Harvard-Smithsonian CfA, *invited talk*, Sep. 2016
 - CITA seminar, University of Toronto, Sep. 2016
 - SFIR seminar, Princeton University, Sep. 2016
 - CIERA seminar, Northwestern University, *invited talk*, Aug. 2016
 - Massive Beasts of the Cosmos Conference, South Africa, contributed talk, Jul. 2016
 - Santa Cruz Galaxy Workshop, University of California Santa Cruz, contributed talk, Aug. 2015
 - NVIDIA seminar, University of Arizona, *invited talk*, May 2015
 - CCAPP seminar, The Ohio State University, Apr. 2015
 - NRL lunch talk, Naval Research Laboratory, Washington DC, *invited talk*, Jan. 2015
 - TAP Prize Lecture, University of Arizona, *invited talk*, Dec. 2014
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SUBMITTED AND REFEREED PUBLICATIONS

23. *Dynamics of hot galactic winds launched from non-uniform starburst cores*
Nguyen, Dustin D., Thompson, Todd A., **Schneider, Evan E.**, Lopez, Sebastian, Lopez, Laura A., 2022, *submitted to MNRAS letters*.
22. *New Constraints on Warm Dark Matter from the Lyman- α Forest Power Spectrum*
Villaseñor, Bruno, Robertson, Brant E., Madau, Piero, **Schneider, Evan E.**, 2022, *submitted to Phys. Rev. D*.
21. *Revealing the Galaxy-Halo Connection through Machine Learning*
Hausen, Ryan, Robertson, Brant E., Zhu, Hanjue, Gnedin, Nickolay Y., Madau, Piero, **Schneider, Evan E.**, Villaseñor, Bruno, Drakos, Nicole E., 2022, *submitted to AAS journals*.
20. *Inferring the Thermal History of the Intergalactic Medium from the Properties of the Hydrogen and Helium Lyman- α Forest*
Villaseñor, Bruno, Robertson, Brant E., Madau, Piero, **Schneider, Evan E.**, 2022, *ApJ*, Volume 933, 59.
19. *NVIDIA IndeX accelerated computing for visualizing Cholla's galactic winds*
Schneider, Evan E., Robertson, Brant E., Kuhn, Alexander, Lux, Christopher, Nienhaus, Marc, 2021, *Parallel Computing*, Volume 107, 102809.
18. *Synthetic Absorption Lines from Simulations of Multiphase Gas in Galactic Winds*
de la Cruz, Lita M., **Schneider, Evan E.**, Ostriker, Eve C., 2021, *ApJ*, Volume 919, 112.
17. *The characteristic momentum of radiatively cooling energy-driven galactic winds*
Lochhaas, Cassandra, Thompson, Todd A., **Schneider, Evan E.** 2021, *MNRAS*, Volume 504, Issue 3.
16. *Effects of Photoionization and Photoheating on Ly α Forest Properties from Cholla Cosmological Simulations*
Villaseñor, Bruno, Robertson, Brant E., Madau, Piero, **Schneider, Evan E.** 2021 *ApJ*, Volume 912, 138.
15. *First Results from SMAUG: Uncovering the Origin of the Multiphase Circumgalactic Medium with a Comparative Analysis of Idealized and Cosmological Simulations*
Fielding, Drummond B., Tonnesen, Stephanie, DeFelippis, Daniel, Li, Miao, Su, Kung-Yi, Bryan, Greg L., Kim, Chang-Goo, Forbes, John C., Somerville, Rachel S., Battaglia, Nicholas, **Schneider, Evan E.**, Li, Yuan, Choi, Ena, Hayward, Christopher C., Hernquist, Lars. 2020, *ApJ*, Volume 903, 32.
14. *The Physical Nature of Starburst-driven Galactic Outflows*
Schneider, Evan E., Ostriker, Eve C., Robertson, Brant E., Thompson, Todd A. 2020, *ApJ*, Volume 895, 43.
13. *The Production of Cool Gas in Thermally-Driven Outflows*
Schneider, Evan E., Robertson, Brant E., Thompson, Todd A. 2018, *ApJ*, Volume 862, 56.
12. *Introducing CGOLS: The Cholla Galactic Outflow Simulation Suite*
Schneider, Evan E. & Robertson, Brant E. 2018, *ApJ*, Volume 860, 135.
11. *Hydrodynamical Coupling of Mass and Momentum in Multiphase Galactic Winds*
Schneider, Evan E. & Robertson, Brant E. 2017, *ApJ*, Volume 834, 144.
10. *Cholla: A New Massively-Parallel Hydrodynamics Code for Astrophysical Simulation*
Schneider, Evan E. & Robertson, Brant E. 2015, *ApJS*, Volume 217, Issue 2, 24.
9. *Steps Toward Unveiling the True Nature of Active Galactic Nuclei: Photometric Characterization of Active Galactic Nuclei in COSMOS*
Schneider, Evan E. Impey, C. D., Trump, J. R., Salvato, M. 2013, *ApJ*, Volume 766, Issue 2, 123.
8. *The 2012 Hubble Ultra Deep Field (UDF12): Observational Overview*
Koekemoer, A. M., Ellis, R. S., McLure, R. J., Dunlop, J. S., Robertson, B. E., Ono, Y., Schenker, M. A., Ouchi, M., Bowler, R. A., Rogers, A. B., Curtis-Lake, E., **Schneider, E. E.**, Charlot, S., Stark, D. P., Furlanetto, S. R., Cirasuolo, M., Wild, V., Targett, R. 2013, *ApJS*, Volume 209, Issue 1.
7. *Evolution of the Sizes of Galaxies over $7 < z < 12$ Revealed by the 2012 Hubble Ultra Deep Field Campaign*
Ono, Y., Ouchi, M., Curtis-Lake, E., Schenker, M. A., Ellis, R. S., McLure, R. J., Dunlop, J. S., Robertson, B. E., Koekemoer, A. M., Bowler, R. A., Rogers, A. B., **Schneider, E. E.**, Charlot, S., Stark, D. P., Shimasaku, K., Furlanetto, S. R., Cirasuolo, M. 2013, *ApJ*, Volume 777, Issue 2.
6. *The UV Continuum and Inferred Stellar Populations of Galaxies at $z = 7 - 9$ Revealed by the Hubble Ultra-Deep Field 2012 Campaign*
Dunlop, J. S., Rogers, A. B., McLure, R. J., Ellis, R. S., Robertson, B. E., Koekemoer, A., Dayal, P., Curtis-Lake, E., Wild, V., Charlot, S., Bowler, R. A., A., Schenker, M. A., Ouchi, M., Ono, Y., Cirasuolo, M., Furlanetto, S. R., Stark, D. P., Targett, T. A., **Schneider, E. E.** 2013, *MNRAS*, Volume 432, Issue 4.
5. *The UV Luminosity Function of Star-forming Galaxies via Dropout Selection at Redshifts $z \sim 7$ and 8 from the 2012 Ultra Deep Field Campaign*
Schenker, M. A., Robertson, B. E., Ellis, R. S., Ono, Y., McLure, R. J., Dunlop, J. S., Koekemoer, A., Bowler, R. A. A., Ouchi, M., Curtis-Lake, E., Rogers, A. B., **Schneider, E. E.**, Charlot, S., Stark, D. P., Furlanetto, S. R., Cirasuolo, M. 2013, *ApJ*, Volume 768, Issue 2.

4. *New Constraints on Cosmic Reionization from the 2012 Hubble Ultra Deep Field Campaign*
Robertson, B. E., Furlanetto, S. R., **Schneider, E. E.**, Charlot, S., Ellis, R. S., Stark, D. P., McLure, R. J., Dunlop, J. S., Koekemoer, A., Schenker, M. A., Ouchi, M., Ono, Y., Curtis-Lake, E., Rogers, A. B., Bowler, R. A. A., Cirasuolo, M. 2013, ApJ, Volume 768, Issue 1.
3. *The Abundance of Star-forming Galaxies in the Redshift Range 8.5-12: New Results from the 2012 Hubble Ultra Deep Field Campaign*
Ellis, R. S., McLure, R. J., Dunlop, J. S., Robertson, B. E., Ono, Y., Schenker, M. A., Koekemoer, A., Bowler, R. A. A., Ouchi, M., Rogers, A. B., Curtis-Lake, E., **Schneider, E. E.**, Charlot, S., Stark, D. P., Furlanetto, S. R., Cirasuolo, M. 2013, ApJL, Volume 763, Issue 1.
2. *TW Hya: Spectral Variability, X-Rays, and Accretion Diagnostics*
Dupree, A. K., Brickhouse, N. S., Cranmer, S. R., Luna, G. J. M., **Schneider, E. E.**, Bessell, M. S., Bonanos, A., Crause, L. A., Lawson, W. A., Mallik, S. V., Schuler, S. C. 2012, ApJ, Volume 760, Issue 1.
1. *Methyl Group Rotation, ^1H Spin-lattice Relaxation in an Organic Solid, and the Analysis of Nonexponential Relaxation*
Beckmann, P. A. & **Schneider, E. E.** 2012, Journal of Chemical Physics, Volume 136, Issue 5.