

Greg Salvesen

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🌐 Astro-Greg.com • 🌐 AstroSoM.com • ♂ he/him/his

Employment

Los Alamos National Laboratory <i>Postdoctoral Research Associate, Computational Physics and Methods (CCS-2)</i>	Los Alamos, NM, USA <i>Oct 2019–Present</i>
University of California, Santa Barbara <i>National Science Foundation Astronomy & Astrophysics Postdoctoral Fellow</i>	Santa Barbara, CA, USA <i>Oct 2016–Sep 2019</i>

Education

University of Colorado Boulder <i>PhD in Astrophysical & Planetary Sciences, Advisor: Professor Mitch Begelman</i> <i>Thesis: Re-thinking black hole accretion disks</i>	Boulder, CO, USA <i>Dec 2011–Aug 2016</i>
University of Colorado Boulder <i>MS in Astrophysical & Planetary Sciences, Advisor: Professor Mitch Begelman</i> <i>Thesis: Physics of the Kelvin–Helmholtz Instability</i>	Boulder, CO, USA <i>Aug 2009–Dec 2011</i>
University of Michigan, Ann Arbor <i>BS in Astronomy & Astrophysics (high honors), Advisor: Professor Jon Miller</i> <i>BS in Interdisciplinary Physics</i> <i>BSE in Aerospace Engineering (magna cum laude)</i>	Ann Arbor, MI, USA <i>Sep 2005–Aug 2009</i>

Awards & Scholarships

- **2016–2019:** NSF Astronomy & Astrophysics Postdoctoral Fellowship (\$289,000), UC Santa Barbara
- **2014–2016:** NASA Earth and Space Science Fellowship (\$60,000), University of Colorado Boulder
- **2014:** Richard N. Thomas Award, for outstanding research by a CU Boulder Astrophysics PhD student
- **2014:** Chambliss Astronomy Achievement Student Award, for graduate student poster at AAS meeting
- **2010–2013:** NSF Graduate Research Fellowship (\$90,000), University of Colorado Boulder
- **2008:** Research Experience for Undergraduates Program, Harvard–Smithsonian Center for Astrophysics
- **2007:** Scientific and Engineering Student Internship, NASA Goddard Space Flight Center

Colloquia & Invited Seminars

- **Mar 2020:** Carnegie Mellon University, Astrophysics Seminar (cancelled due to COVID-19)
- **Jun 2019:** Caltech, Theoretical AstroPhysics Including Relativity and Cosmology (TAPIR) Seminar
- **May 2019:** Institute for Advanced Study, Informal Astrophysics Seminar
- **Dec 2018:** Los Alamos National Laboratory, Special Seminar
- **Nov 2018:** Black Hole Initiative, Colloquium
- **Jan 2018:** University of Nevada, Las Vegas, Colloquium
- **Dec 2015:** University of California, Berkeley, Theoretical Astrophysics Center (TAC) Seminar
- **Sep 2014:** University of Arizona / National Optical Astronomy Observatory, FLASH Talk

Departmental Seminars

- **Jun 2019:** University of California, Santa Barbara, Astrophysics Lunch Seminar
- **May 2019:** Instituto de Astrofísica de Canarias, Special Seminar
- **Jun 2018:** University of Michigan, Ann Arbor, Special Seminar
- **Jan 2018:** University of California, Santa Barbara, Astrophysics Lunch Seminar

- **Mar 2017:** University of California, Santa Barbara, Astrophysics Lunch Seminar
- **Oct 2016:** University of California, Santa Barbara, Astrophysics Lunch Seminar
- **Jan 2016:** University of Colorado Boulder, CASA/JILA Astrophysics Lunch Seminar
- **Dec 2014:** University of Colorado Boulder, CASA/JILA Astrophysics Lunch Seminar
- **Feb 2014:** University of Colorado Boulder, CASA/JILA Astrophysics Lunch Seminar
- **Jan 2014:** University of Hawai'i, Special Seminar
- **Dec 2013:** University of Pennsylvania, Special Seminar

Contributed Talks

- **May 2020:** Los Alamos / Arizona Days eMeeting (15 min), *"Spin-Orbit Misalignments in Microquasars"*
- **Jan 2019:** AAS Meeting, Seattle, WA (5 min), *"Disk-Jet Alignment in the Microquasar GRO J1655-40"*
- **Jan 2019:** NSF Fellows Symposium, Seattle, WA (15 min), *"Black Hole Spin Orientation in Microquasars"*
- **Jun 2018:** AstroViz Workshop, Pasadena, CA (8 min), *"Astronomy Data Sonification"*
- **Jan 2018:** AAS Meeting, National Harbor, MD (5 min), *"Black Hole Spin Measurement Uncertainty"*
- **Jan 2018:** NSF Fellows Symposium, National Harbor, MD (15 min), *"Astronomy Sound of the Month"*
- **Jan 2017:** AAS Meeting, Grapevine, TX (5 min), *"Strongly Magnetized Accretion Disks Around Black Holes"*
- **Jan 2016:** AAS Meeting, Kissimmee, FL (5 min), *"Dynamo Activity in Strongly Magnetized Accretion Disks"*
- **Jan 2015:** AAS Meeting, Seattle, WA (15 min), *"Inner Accretion Disk Regions of Black Hole X-ray Binaries"*

Teaching Experience

Instructor of Record

- **Summer 2018:** PHYS 2: Basic Physics, 4 credits, 6 weeks, 53 students, UC Santa Barbara
 - PHYS 2 is the second course in the physics sequence for undergraduate engineering and science majors
 - Evaluated by students with a median score of "Excellent" across all teaching fields

Guest Lecturer

- **Oct 2020:** Exploring Black Holes, Undergraduate Class (Virtual), MIT (1 hr 30 min)
- **Apr 2020:** Modern Astrophysics for Everyone, Community Ed Class, Univ of New Mexico, Los Alamos (1 hr)
- **Oct 2013:** Black Holes, Undergraduate Non-Majors Class, University of Colorado Boulder (1 hr 30 min)

Miscellaneous

- **Spring 2013:** Grader, ASTR 5710 High Energy Astrophysics, Graduate Class, University of Colorado Boulder
- **2008–2009:** Tutor, Undergraduate Intro-Level Astronomy Courses, University of Michigan, Ann Arbor

Students / Mentorship Experience

- **2018–2020:** Supavit Pokawanvit, Undergraduate Researcher, UCSB (Led to: Salvesen & Pokawanvit 2020)
- **2013–2015:** Kristina Salgado, Undergraduate Researcher, CU Boulder (Led to: Honors Thesis)

Diversity, Equity, & Inclusion Initiatives

- **2018–2019:** Developer of accessible astronomy education materials for the blind and visually impaired
- **Feb 2018:** Guest Writer, Astrobites daily astrophysical literature journal, Wrote about accessibility in science
- **Oct 2018:** Guest, Eyes on Success podcast to discuss data sonification for the blind and visually impaired

Supercomputing Allocations & Usage

- **2016–2017:** Co-I, 3.3M SU, Janus, *"Local Simulations of Magnetized Accretion Disks"*
- **2014–2015:** Co-I, 11.2M SU, Janus, *"Dynamo Activity in Strongly Magnetized Accretion Disks"*
- **2013–2014:** User, 5.2M SU, Janus, *"Local Simulations of Accretion Disk Coronae"*
- **2012–2013:** User, 5.2M SU, Janus, *"Instabilities in Relativistic, Magnetized, Astrophysical Jets"*
- **2011:** Test User, ~10M SU, Janus, *"Simulations of the Kelvin-Helmholtz Instability"*

Professional Service

Departmental Service

- **2019–Present:** Organizer of the Astrophysics Seminar series, LANL, Center for Theoretical Astrophysics
- **Spring 2018:** Initiated and organized the Astrophysics Colloquium series, UC Santa Barbara, Dept of Physics
- **2013–2014:** Colloquium Committee, CU Boulder, Dept of Astrophysical and Planetary Sciences
- **2011–2013:** Comprehensive Exams Committee, CU Boulder, Dept of Astrophysical and Planetary Sciences
- **2009–2010:** Graduate Concerns Committee, CU Boulder, Dept of Astrophysical and Planetary Sciences

Peer Review

- Peer Reviewer, *Chandra X-ray Observatory* Guest Observer Program
- Reviewer, Future Investigators in NASA Earth and Space Science and Technology Graduate Fellowship
- Regular Referee, MNRAS, A&A, PRL

Miscellaneous

- **2018–Present:** Science Working Group Member, *STROBE-X* X-ray Timing Probe Concept
- **2014, 2015, 2016, 2017, 2018, 2019:** Judge, American Astronomical Society Chambliss poster awards

Outreach

- **Feb 2020:** Volunteer Judge, Los Alamos County Science Fair, Los Alamos, NM
- **Jun 2019:** Invited Speaker, Ventura County Astronomical Society Club Meeting, Ventura, CA
- **Mar 2019:** Invited Speaker, Central Coast Astronomical Society Club Meeting, San Luis Obispo, CA
- **Oct 2018, Apr 2018, Mar 2017, Jan 2017, Apr 2015:** Presenter, Astronomy on Tap
- **Jan 2018–Feb 2019:** Founder, Astronomy Sound of the Month outreach website AstroSoM.com
- **Sep 2016:** Speaker, Ignite Boulder, Short 5-minute talks about geeky passions, Boulder, CO
- **Feb 2016:** Speaker, Nerd Nite, Monthly public talks with chapters nationwide, Denver, CO
- **2010, 2011:** Volunteer Judge, Flagstaff Academy Science Fair, Longmont, CO
- **2010, 2011:** Guest Speaker, Academic career paths for high school students, Andover High School
- **2009–2016:** Host, Public observing nights 1–2 times per year, Sommers–Bausch Observatory, CU Boulder
- **2008–2009:** Presenter, Monthly public planetarium shows and observing nights, University of Michigan

Press

- **Dec 2019:** Editor's Choice, De Gruyter Journals *Science Discoveries*, “*Six-Day Footraces Live on Today*”
- **Jan 2019:** Contributor, Gizmodo science and technology website, “*What's the Loudest Sound in the Universe?*”
- **Mar 2018:** Contributor, Astronomy Picture of the Day, “*Hubble Ultra-Deep Field in Light and Sound*”
- **May 2016:** Guest, KGNU's *How on Earth* radio science show, “*Graduation Special*”, Boulder, CO
- **2018–2019:** Outlets featuring my Astronomy Sound of the Month outreach website AstroSoM.com include:
 - Newsweek, “*‘Milky Way Blues’: Listen to the Strange Jazzy Sounds of our Galaxy Rotating*”
 - IFL Science, “*Someone Turned Our Milky Way Galaxy Into Music And It's, Uh, Interesting*”
 - EarthSky, “*Hear the Milky Way Blues*”
 - Association of American Universities, “*The Milky Way Blues*”
 - Tech Times, “*University Professor Creates Theme Song for Milky Way Galaxy: Listen Here*”
 - The Bottom Line UCSB, “*AstroSom: Making Outer Space Accessible for Blind People*”

Skills

- Data reduction: *Swift*/XRT, *Chandra*/ACIS, *XMM-Newton*/EPIC, *RXTE*/PCA/HEXTE, *ROSAT*/PSPC
- Programming and software fluency: Python, Bash, IDL, Athena (MHD code), XSPEC, ds9, yt, L^AT_EX
- Experience with C/C++, MATLAB, Mathematica, OpenMPI, Mercurial, Git, ISIS, emcee
- Experience with HTML5/CSS/PHP/JavaScript, developed and maintained the website AstroSoM.com
- Enthusiastic public speaker (e.g., Astronomy on Tap, Ignite, Nerd Nite, Stories on Stage, The Narrators)
- Proficient in basics of French language

References

- Professor Phil Armitage, Stony Brook University & Flatiron Institute, ✉ philip.armitage@stonybrook.edu
- Professor Mitch Begelman, University of Colorado Boulder, ✉ mitch@jila.colorado.edu
- Professor Omer Blaes, University of California, Santa Barbara, ✉ blaes@physics.ucsb.edu
- Professor Jon Miller, University of Michigan, Ann Arbor, ✉ jonmm@umich.edu

Peer-Reviewed Publications

- Count: 11 (all publications), 9 (lead author)
- *h*-index: 7 (all publications), 5 (lead author)
- Citations: 189 (all publications), 151 (lead author)

11. *Black Hole Spin in X-ray Binaries: Giving Uncertainties an f*
Salvesen, G. & Miller, J. M. 2020, Monthly Notices of the Royal Astronomical Society, accepted (in press)
10. *Origin of Spin-Orbit Misalignments: The Microblazar V4641 Sgr*
Salvesen, G. & †Pokawanvit, S. 2020, Monthly Notices of the Royal Astronomical Society, 495, 2179–2204
†Undergraduate student mentee
9. *Six Day Footraces in the Post-Pedestrianism Era*
Salvesen, G. 2019, Journal of Quantitative Analysis in Sports, Volume 15, Issue 2, 117–128
8. *Convective Quenching of Field Reversals in Accretion Disc Dynamos*
Coleman, M. S. B., Yerger, E., Blaes, O., **Salvesen, G.**, & Hirose, H. 2017, Monthly Notices of the Royal Astronomical Society, 467, 2625–2635
7. *Strongly Magnetized Accretion Discs Require Poloidal Flux*
Salvesen, G., Armitage, P. J., Simon, J. B., & Begelman, M. C. 2016, Monthly Notices of the Royal Astronomical Society, 460, 3488–3493
6. *Accretion Disc Dynamo Activity in Local Simulations Spanning Weak-to-Strong Net Vertical Magnetic Flux Regimes*
Salvesen, G., Simon, J. B., Armitage, P. J., & Begelman, M. C. 2016, Monthly Notices of the Royal Astronomical Society, 457, 857–874
5. *Quantifying Energetics and Dissipation in Magnetohydrodynamic Turbulence*
Salvesen, G., Beckwith, K., Simon, J. B., O’Neill, S. M., & Begelman, M. C. 2014, Monthly Notices of the Royal Astronomical Society, 438, 1355–1376
4. *A Physical Model for State Transitions in Black Hole X-ray Binaries*
Nixon, C. & **Salvesen, G.** 2014, Monthly Notices of the Royal Astronomical Society, 437, 3994–3999
3. *Spectral Hardening as a Viable Alternative to Disc Truncation in Black Hole State Transitions*
Salvesen, G., Miller, J. M., Reis, R. C., & Begelman, M. C. 2013, Monthly Notices of the Royal Astronomical Society, 431, 3510–3532
2. *Shock Speed, Cosmic Ray Pressure, and Gas Temperature in the Cygnus Loop*
Salvesen, G., Raymond, J. C., & Edgar, R. J. 2009, The Astrophysical Journal, 702, 327–339
1. *A Deep XMM-Newton Observation of the Quasar 3C 287*
Salvesen, G., Miller, J. M., Cackett, E., & Siemiginowska, A. 2009, The Astrophysical Journal, 692, 753–757

Other Publications

1. *STROBE-X: X-ray Timing and Spectroscopy on Dynamical Timescales from Microseconds to Years*
Ray, P. et al. 2019 (w/ SWG member **Salvesen, G.**), submitted to the Astro2020 Decadal Survey