

CONTACT INFORMATION

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EDUCATION

University of Colorado Boulder	Aug 2009–Aug 2016
Ph.D., Astrophysical & Planetary Sciences	Aug 2016
M.S., Astrophysical & Planetary Sciences	Dec 2011
<i>Thesis: Rethinking Black Hole Accretion Discs</i>	
<i>Advisor: Prof. Mitchell C. Begelman</i>	
University of Michigan, Ann Arbor	Sep 2005–Aug 2009
B.S., Astronomy & Astrophysics (High Honors)	Aug 2009
B.S., Interdisciplinary Physics	Aug 2009
B.S.E., Aerospace Engineering (magna cum laude)	Aug 2009
<i>Advisor: Prof. Jon M. Miller</i>	
Andover High School Graduate (Andover, Massachusetts)	Sep 2001–Jun 2005

RESEARCH EXPERIENCE

University of California, Santa Barbara	
★ NSF Astronomy & Astrophysics Postdoctoral Fellow	Oct 2016–
<i>Sponsoring Scientist: Prof. Omer M. Blaes</i>	
JILA, University of Colorado Boulder	
★ NASA Earth and Space Science Fellow	Sep 2014–Aug 2016
Graduate Research Assistant	Sep 2013–Aug 2014
★ NSF Graduate Research Fellow	Sep 2010–Aug 2013
<i>Advisor: Prof. Mitchell C. Begelman</i>	
CASA, University of Colorado Boulder	
Graduate Research Assistant	Aug 2009–Aug 2010
<i>Advisor: Prof. Jack O. Burns</i>	
University of Michigan, Ann Arbor	
Undergraduate Research Assistant	May 2007–Aug 2009
<i>Advisor: Prof. Jon M. Miller</i>	
Harvard-Smithsonian Center for Astrophysics (Cambridge, Massachusetts)	
Research Experience for Undergraduates	Jun 2008–Aug 2008
<i>Advisors: Dr. John C. Raymond & Dr. Richard J. Edgar</i>	
NASA Goddard Space Flight Center (Greenbelt, Maryland)	
Scientific and Engineering Student Internship	Jun 2007–Aug 2007
<i>Advisor: Dr. Alexander Kuttyrev</i>	

RESEARCH INTERESTS

Phenomena: Accretion disks, black holes, X-ray binaries, outflows, outbursts, variability on all timescales

Processes: Magnetic dynamos, fluid instabilities, radiation mechanisms, energy transfer and dissipation

Methods: Numerical simulations, X-ray observatories, archival data, analytic approaches, visualizations

REFEREED PUBLICATIONS

10. “Black Hole Spin Sensitivity to the Accretion Disc Atmosphere Colour Correction Factor”
Salvesen, G. & Begelman, M. C. 2018, MNRAS, to be re-submitted
9. “Six Day Footraces in the Post-Pedestrianism Era”
Salvesen, G. 2018, Journal of Quantitative Analysis in Sports, submitted
8. “Convective Quenching of Field Reversals in Accretion Disc Dynamos”
Coleman, M. S. B., Yarger, E., Blaes, O., **Salvesen, G.**, & Hirose, H. 2017, MNRAS, 467, 2625–2635
7. “Strongly Magnetized Accretion Discs Require Poloidal Flux”
Salvesen, G., Armitage, P. J., Simon, J. B., & Begelman, M. C. 2016, MNRAS, 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, MNRAS, 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, MNRAS, 438, 1355–1376
4. “A Physical Model for State Transitions in Black Hole X-ray Binaries”
Nixon, C. & **Salvesen, G.** 2014, MNRAS, 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, MNRAS, 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, ApJ, 702, 327–339
1. “A Deep *XMM-Newton* Observation of the Quasar 3C 287”
Salvesen, G., Miller, J. M., Cackett, E., & Siemiginowska, A. 2009, ApJ, 692, 753–757

AWARDS AND HONORS

- ★ NSF Astronomy & Astrophysics Postdoctoral Fellowship (9 fellowships, 92 applications) Oct 2016–
- ★ NASA Earth and Space Science Fellowship (8 fellowships, 134 applications) Sep 2014–Aug 2016
- ★ NSF Graduate Research Fellowship Sep 2010–Sep 2013
- Graduate School Dissertation Completion Fellowship (CU Boulder) Declined in order to accept NESSF
- Richard N. Thomas Award (JILA, CU Boulder) 2014
- Chambliss Astronomy Achievement Student Award, 223rd AAS Meeting Jan 2014
- Honorific Supplemental Fellowship (CU Boulder, APS Department) 2009, 2010, 2011, 2012, 2014

SUPERCOMPUTING USAGE AND TIME ALLOCATIONS

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

TEACHING AND MENTORING

- ★ Instructor of record for PHYS 2: Basic Physics (53 students; 4 credits; UC Santa Barbara) Summer 2018
→ 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 fields.
- ★ Mentor to undergraduate researcher Mr. Supavit Pokawanvit (UC Santa Barbara) Mar 2018–
- ★ Developer of accessible astronomy education materials for the visually impaired 2018–
- Mentored Ms. Kristina Salgado’s undergraduate Honors Thesis (CU Boulder) Fall 2013–Spring 2015
- Guest lectured for the course “Black Holes” for undergraduate non-majors (CU Boulder) Fall 2013
- Tutored weekly for undergraduate introductory astronomy courses (University of Michigan) 2008–2009

OUTREACH

- ★ Founder of the *Astronomy Sound of the Month* outreach website AstroSoM.com Jan 2018–
→ Outlets featuring *AstroSoM: Newsweek*, *IFL Science*, *EarthSky*, *Association of American Universities*
- ★ Contributor to *Astronomy Picture of the Day: Hubble Ultra-Deep Field in Light and Sound* Mar 2018
- ★ Five-time *Astronomy on Tap* speaker: 1) Apr 2015; 2) Jan 2017; 3) Mar 2017; 4) Apr 2018; 5) Oct 2018
- Guest on *Eyes on Success* podcast, discussed data sonification for the blind/visually impaired Oct 2018
- Guest writer for *Astrobites*, a daily astrophysical literature journal aimed at undergraduates Feb 2018
- Speaker at *Ignite Boulder*, short 5-minute talks about geeky passions (Boulder, Colorado) Sep 2016
- Guest on KGNU radio science show *How on Earth* (Boulder, Colorado) May 2016
- Speaker at *Nerd Nite*, monthly public talks with chapters nationwide (Denver, Colorado) Feb 2016
- Host for public observing nights 2–3 times/year (CU Boulder Sommers-Bausch Observatory) 2009–2016
- Volunteer judge for Flagstaff Academy Science Fair (Longmont, Colorado) 2010, 2011
- Guest speaker on academic career paths for high school students (Andover, Massachusetts) 2010, 2011
- Presenter for monthly public planetarium shows and observing nights (University of Michigan) 2008–2009

PROFESSIONAL SERVICE

- ★ Initiated and organized an Astrophysics Colloquium series (UC Santa Barbara) Spring 2018
- Peer-review Referee: *MNRAS*, *Astronomy & Astrophysics*, *Physical Review Letters*
- Peer-review Panels: *Chandra X-ray Observatory*
- Science Working Group member for the *STROBE-X* probe-class observatory 2018
- Volunteer judge for AAS Chambliss poster awards 2014, 2015, 2016, 2017, 2018
- Colloquium Committee (CU Boulder, APS Department) Fall 2013–Fall 2014
- Comprehensive Exams Committee (CU Boulder, APS Department) Fall 2011–Fall 2013
- Graduate Concerns Committee (CU Boulder, APS Department) Fall 2009–Fall 2010

PROFESSIONAL MEMBERSHIPS

- American Astronomical Society, Full Member 2009–
- AAS High Energy Astrophysics Division, Member 2011–

SKILLS

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

REFERENCES

- Prof. Omer M. Blaes, University of California, Santa Barbara, blaes@physics.ucsb.edu, (805) 893-7239
- Prof. Mitchell C. Begelman, JILA, University of Colorado Boulder, mitch@jila.colorado.edu, (303) 492-7856
- Prof. Philip J. Armitage, Stony Brook University & Flatiron Institute, philip.armitage@stonybrook.edu
- Prof. Jon M. Miller, University of Michigan, Ann Arbor, jonmm@umich.edu, (734) 764-4185

PROFESSIONAL TALKS

21. “Black Hole Spin Orientation in Microquasars”
★ Invited Colloquium, Black Hole Initiative, Cambridge, MA, 2018 Nov 27
20. “Astronomy Sound of the Month”
University of Michigan, Ann Arbor, 2018 Jun 25
19. “The Role of Magnetic Fields in Black Hole Accretion Disks”
University of Michigan, Ann Arbor, 2018 Jun 20
18. “Astronomy Data Sonification”
AstroViz 2018 Workshop, Pasadena, CA, 2018 Jun 14
17. “The Role of Magnetic Fields in Black Hole Accretion Disks”
★ Invited Colloquium, University of Nevada, Las Vegas, 2018 Jan 26
16. “Astronomy Sound of the Month”
Astrophysics Lunch Seminar, University of California, Santa Barbara, 2018 Jan 19
15. “Black Hole Spin Measurement Uncertainty”
231st Meeting of the AAS, National Harbor, MD, 2018 Jan 12
14. “Astronomy Sound of the Month”
NSF Astronomy & Astrophysics Postdoc Fellows Symposium, National Harbor, MD, 2018 Jan 08
13. “Black Hole Spin in X-ray Binaries”
Astrophysics Lunch Seminar, University of California, Santa Barbara, 2017 Mar 16
12. “Strongly Magnetized Accretion Disks Around Black Holes”
229th Meeting of the AAS, Grapevine, TX, 2017 Jan 04
11. “Rethinking Black Hole Accretion Discs”
Astrophysics Seminar, University of California, Santa Barbara, 2016 Oct 26
10. “Rethinking Black Hole Accretion Discs”
Ph.D. Dissertation, University of Colorado Boulder, 2016 Jun 30
9. “Dynamo Activity in Strongly Magnetized Accretion Disks”
CASA/JILA Astrophysics Lunch Seminar, University of Colorado Boulder, 2016 Jan 29
8. “Dynamo Activity in Strongly Magnetized Accretion Disks”
227th Meeting of the AAS, Kissimmee, FL, 2016 Jan 08
7. “Dynamo Activity in Strongly Magnetized Accretion Disks”
TAC Seminar, University of California, Berkeley, 2015 Dec 07
6. “Inner Accretion Disk Regions of Black Hole X-ray Binaries”
Dissertation Talk, 225th Meeting of the AAS, Seattle, WA, 2015 Jan 06
5. “Resolving Discrepancies in Black Hole Spin Measurements”
CASA/JILA Astrophysics Lunch Seminar, University of Colorado Boulder, 2014 Dec 12
4. “Resolving Discrepancies in Black Hole Spin Measurements”
NOAO-Tucson FLASH Talk, University of Arizona, 2014 Sep 26
3. “Spectral Hardening of the Accretion Disk in Black Hole X-ray Binaries”
CASA/JILA Astrophysics Lunch Seminar, University of Colorado Boulder, 2014 Feb 21
2. “A Fresh Perspective on Black Hole State Transitions”
Institute for Astronomy, University of Hawaii, 2014 Jan 16
1. “A Fresh Perspective on Black Hole State Transitions”
University of Pennsylvania, 2013 Dec 06

POSTER PRESENTATIONS

11. “Magnetized Black Hole Accretion Disks with Poloidal Flux”
Salvesen, G., Simon, J. B., Armitage, P. J., & Begelman, M. 2017, 16th HEAD Mtg, Sun Valley, ID
10. “Strongly Magnetized Black Hole Accretion Disks”
Salvesen, G., Armitage, P. J., Simon, J. B., & Begelman, M. C. 2016, *NuSTAR* Mtg, Pasadena, CA
9. “Strongly Magnetized Black Hole Accretion Disks”
Salvesen, G., Armitage, P. J., Simon, J. B., & Begelman, M. 2016, Transient Sky, Cambridge, MA
8. “A Physical Mechanism for State Transitions in Black Hole X-ray Binaries”
Salvesen, G. & Nixon, C. 2014, 223rd Meeting of the AAS, National Harbor, MD
7. “Spectral Hardening in Black Hole X-ray Binaries”
Salvesen, G., Miller, J. M., Reis, R. C., & Begelman, M. C. 2013, JSI Workshop, Annapolis, MD
6. “Black Hole Accretion: Discs, Jets, Coronae, & State Transitions”
Salvesen, G., Begelman, M. C., Simon, J. B., & Nixon, C. 2013, JILA Poster Fest
5. “Properties and Distribution of Current Sheets in Accretion Disk Coronae”
Salvesen, G., Begelman, M. C., Simon, J. B., & Beckwith, K. 2013, 13th HEAD Mtg, Monterey, CA
4. “Turbulence, Energy Transfer, & Dissipation in 3D MHD Simulations of Kelvin–Helmholtz Instability”
Salvesen, G., Beckwith, Simon, O’Neill, Skillman, & Begelman, 2012, 219th AAS Mtg, Austin, TX
3. “Shocks in Galaxy Cluster X-ray Temperature Images”
Salvesen, G., Henning, J. W., Skillman, S. W., & Burns, J. O. 2011, 217th AAS Mtg, Seattle, WA
2. “The Inner Accretion Disk of the Black Hole Binary Transient XTE J1650–500”
Salvesen, G., Miller, J. M., Reis, R. C., & Homan, J. 2010, 215th AAS Meeting, Washington, DC
1. “Shock Speed, Cosmic Ray Pressure, and Temperature in the Cygnus Loop”
Salvesen, G., Raymond, J. C., & Edgar, R. J. 2009, 213th AAS Meeting, Long Beach, CA