

CONTACT INFORMATION	CIERA, Northwestern University 2145 Sheridan Road, F227 Evanston, IL 60208, USA	<i>E-mail:</i> sarah.wellons@northwestern.edu <i>Website:</i> https://sites.northwestern.edu/swellons <i>Citizenship:</i> USA																											
CURRENT POSITION	CIERA Postdoctoral Fellow Northwestern University, Center for Interdisciplinary Exploration and Research in Astrophysics September 2017 – present																												
EDUCATION	Ph.D. Harvard University , Cambridge, MA, 2017 Astronomy and Astrophysics Secondary Field: Computational Science and Engineering Thesis Advisor: Lars Hernquist A.M. Harvard University , Cambridge, MA, 2013 Astronomy and Astrophysics A.B. Princeton University , <i>magna cum laude</i> , Princeton, NJ, 2011 Astrophysical Sciences Certificate: Applications of Computing																												
CURRENT RESEARCH INTERESTS	Galaxy evolution in cosmological simulations , including: <ul style="list-style-type: none"> – The assembly history, evolution, and properties of massive compact elliptical galaxies – The formation of the most massive galaxies at high redshift – The impact of stellar and black hole feedback models on predictions for galaxy growth – Methods for connecting galaxy populations across time 																												
HONORS AND AWARDS	AAS Rodger Doxsey Travel Prize, Honorable Mention (January 2017) National Science Foundation Graduate Research Fellow (2011 - 2016) Harvard Horizons semifinalist (Fall 2015) Harvard University Certificate of Distinction in Teaching (Spring 2013, Spring 2014) Elected to the Society of Sigma Xi (May 2011)																												
RESEARCH EXPERIENCE	<table border="0"> <thead> <tr> <th style="text-align: left;">Dates</th> <th style="text-align: left;">Advisor(s)</th> <th style="text-align: left;">Topic</th> </tr> </thead> <tbody> <tr> <td>2013 - 2017 (PhD thesis)</td> <td>Lars Hernquist</td> <td>Galaxy formation and evolution, primarily in the context of the Illustris cosmological hydrodynamical simulation</td> </tr> <tr> <td>2011 - 2013 (Masters work)</td> <td>Ramesh Narayan Dimitrios Psaltis</td> <td>Variability of emission in GRMHD simulations of black hole accretion disks</td> </tr> <tr> <td>2010 - 2011 (Senior thesis)</td> <td>Anatoly Spitkovsky</td> <td>Particle-in-cell simulations of relativistic shocks, with application to gamma-ray bursts</td> </tr> <tr> <td>Summer 2010 (REU project)</td> <td>Alicia Soderberg</td> <td>Modeling the circumstellar environments of Type Ibc supernovae using observational data</td> </tr> <tr> <td>Spring 2010 (Junior paper)</td> <td>James Stone</td> <td>Exploration of the “super-time-stepping” algorithm for improving simulation efficiency</td> </tr> <tr> <td>Fall 2009 (Junior paper)</td> <td>David Spiegel Jason Nordhaus</td> <td>Modeling the inspiral of a white dwarf during Roche lobe overflow to unbind stellar envelopes</td> </tr> <tr> <td>Summer 2009</td> <td>Inese Ivans</td> <td>Using stellar spectra to measure photospheric metallicity and composition</td> </tr> <tr> <td>Summer 2008</td> <td>Renyue Cen</td> <td>Measuring galaxy properties and constructing merger trees from simulations</td> </tr> </tbody> </table>	Dates	Advisor(s)	Topic	2013 - 2017 (PhD thesis)	Lars Hernquist	Galaxy formation and evolution, primarily in the context of the Illustris cosmological hydrodynamical simulation	2011 - 2013 (Masters work)	Ramesh Narayan Dimitrios Psaltis	Variability of emission in GRMHD simulations of black hole accretion disks	2010 - 2011 (Senior thesis)	Anatoly Spitkovsky	Particle-in-cell simulations of relativistic shocks, with application to gamma-ray bursts	Summer 2010 (REU project)	Alicia Soderberg	Modeling the circumstellar environments of Type Ibc supernovae using observational data	Spring 2010 (Junior paper)	James Stone	Exploration of the “super-time-stepping” algorithm for improving simulation efficiency	Fall 2009 (Junior paper)	David Spiegel Jason Nordhaus	Modeling the inspiral of a white dwarf during Roche lobe overflow to unbind stellar envelopes	Summer 2009	Inese Ivans	Using stellar spectra to measure photospheric metallicity and composition	Summer 2008	Renyue Cen	Measuring galaxy properties and constructing merger trees from simulations	
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5 First-author, 3 Second-author, 1 Nth-author

9. **Wellons, S.** and Torrey, P., 2017, “*An improved probabilistic approach for linking progenitor and descendant galaxy populations using comoving number density*,” MNRAS, 467, 3887
8. Torrey, P., **Wellons, S.**, Ma, C., Hopkins, P., Vogelsberger, M., 2017, “*Forward and backward galaxy evolution in comoving number density space*,” MNRAS, 467, 4872
7. Rodriguez-Gomez, V., Pillepich, A., Sales, L., Genel, S., Vogelsberger, M., Zhu, Q., **Wellons, S.**, Nelson, D., Torrey, P., Springel, V., Ma, C., Hernquist, L., 2016, “*The stellar mass assembly of galaxies in the Illustris simulation: growth by mergers and the spatial distribution of accreted stars*,” MNRAS, 458, 2371 [58 citations]
6. **Wellons, S.**, Torrey, P., Ma, C., Rodriguez-Gomez, V., Pillepich, A., Nelson, D., Genel, S., Vogelsberger, M., & Hernquist, L. 2016, “*The diverse evolutionary paths of simulated high-z massive, compact galaxies to $z = 0$* ,” MNRAS, 456, 1030 [36 citations]
5. Torrey, P., **Wellons, S.**, Machado, F., Griffen, B., Nelson, D., Rodriguez-Gomez, V., McKinnon, R., Pillepich, A., Ma, C., Vogelsberger, M., Springel, V., & Hernquist, L. 2015, “*An analysis of the evolving comoving number density of galaxies in hydrodynamical simulations*,” MNRAS, 454, 2270 [33 citations]
4. **Wellons, S.**, Torrey, P., Ma, C., Rodriguez-Gomez, V., Vogelsberger, M., Kriek, M., van Dokkum, P., Nelson, E., Genel, S., Pillepich, A., Springel, V., Sijacki, D., Snyder, G., Nelson, D., Sales, L., & Hernquist, L. 2015, “*The Formation of Massive, Compact Galaxies at $z=2$ in the Illustris Simulation*,” MNRAS, 449, 361 [71 citations]
3. **Wellons, S.**, Zhu, Y., Psaltis, D., Narayan, R., & McClintock, J. E. 2014, “*A High-Frequency Doppler Feature in the Power Spectra of Simulated GRMHD Black Hole Accretion Disks*,” ApJ, 785, 142 [6 citations]
2. **Wellons, S.**, Soderberg, A. M., & Chevalier, R. A. 2012, “*Radio Observations Reveal Unusual Circumstellar Environments for Some Type Ibc Supernova Progenitors*,” ApJ, 752, 17 [30 citations]
1. Nordhaus, J., **Wellons, S.**, Spiegel, D. S., & Metzger, B. D. 2011, “*Formation of high-field magnetic white dwarfs from common envelopes*,” PNAS, 108, 3135 [51 citations]

PROPOSALS

- Co-I** NASA HST Cycle 24 Award: 12 Orbits 2016
A Chance Alignment: Resolving a Massive Compact Galaxy Actively Quenching at $z=1.8$
PI: Katherine Whitaker
- Co-I** NOAO Gemini Award: 10 Hours 2016
ZFK2: The First Systematic Exploration of the K-band Window and a Census of Massive Galaxies at $4 < z < 6$
PI: Casey Papovich

TEACHING
EXPERIENCE

- Lecturer** for the Banneker/Aztlán summer programs (Summer 2016, Summer 2017)
Teaching Fellow for Astronomy 202a: Galaxies and Dynamics (Harvard University, fall 2015)
Head Teaching Fellow for SPU 19: The Energetic Universe (Harvard University, spring 2014)
Teaching Fellow for Astronomy 120: Stellar Physics (Harvard University, spring 2013)
Teaching Assistant for Astronomy 203: The Universe (Princeton University, spring 2011)

SELECTED
CONFERENCES

- Advances in Galaxy Evolution (Invited)**
Ringberg Castle, Germany, June 2017
- NextProf: Science workshop**
Ann Arbor, MI, May 2017
- 229th **meeting of the American Astronomical Society**
Grapevine, TX, January 2017 (Dissertation talk)
- Deconstructing Galaxies at Cosmic Noon (Invited Discussion Leader)**
Lorentz Center workshop - Leiden, Netherlands, August 2016

Massive Beasts of the Cosmos

Kruger National Park, South Africa, July 2016 (Contributed talk)

What Shapes Galaxies?

Baltimore, MD, April 2016 (Contributed talk)

3D-HST meeting: Census, Evolution, Physics (Invited Talk)

New Haven, CT, November 2015

In the Footsteps of Galaxies: Tracing the Evolution of Environmental Effects

Soverato, Italy, September 2015 (Contributed talk)

The Most Massive Galaxies and their Precursors

Sydney, Australia, February 2015 (Contributed talk)

UCSC Galaxy Workshop

Santa Cruz, CA, August 2014 (Contributed talk)

Computational Astrophysics: Physical Foundations and Numerical Techniques

Heidelberg, Germany, September 2012

Explosive Ideas about Massive Stars: From Observations to Modeling

Stockholm, Sweden, August 2011 (Poster)

DEPARTMENTAL
SEMINARS

University of Arizona galaxy group meeting, Oct. 2016

Northwestern University theory seminar, Sept. 2016

UC Berkeley (Invited) TAC seminar, Sept. 2016

Carnegie Observatories lunch talk, Sept. 2016

UT Austin extragalactic seminar, Feb. 2016

Texas A&M (Invited) astronomy seminar, Feb. 2016

Center for Astrophysics ITC lunch talk, Dec. 2015

University of Massachusetts Amherst astronomy seminar, Nov. 2015

Max Planck Institute for Astronomy galaxy coffee, Sep. 2015

Leiden Observatory lunch talk, Aug. 2015

Center for Astrophysics summer colloquium, Jun. 2015

Princeton University galaxy journal club, May 2015

Space Telescope Science Institute galaxy club talk, Apr. 2015

Center for Astrophysics ITC lunch talk, Mar. 2015

Carnegie Observatories galaxy group meeting, Feb. 2015

UC Riverside astronomy seminar, Feb. 2015

California Institute of Technology tea talk, Feb. 2015

University of Hawaii WEDGE talk, Feb. 2015

University of Arizona NOAO FLASH talk, Jan. 2015

Tufts University astronomy seminar, Nov. 2014

TECHNICAL
SKILLS

Programming languages: Python, IDL, Matlab, C, Fortran, Java

Simulation software: Hydrodynamical codes (including mesh codes [e.g. Arepo] and particle codes [e.g. Gadget]), particle-in-cell codes (e.g. Tristan)

SERVICE

NSF proposal review panelist (2017)

Reviewer for MNRAS (2017)

Co-supervised an undergraduate in the Aztlán summer program (Summer 2016)

Lecturer and mentor for Banneker summer students (Summer 2016, Summer 2017)

Graduate Admissions committee (Spring 2016)

ITC Website Design committee (Spring 2015)

Mentor to first-year graduate students (2016-17, 2015-16, 2014-15)

OUTREACH

We Teach Science (2015-16)

Remotely mentored a high school student in mathematics

Adopt-a-Physicist (Fall 2013, Fall 2014, Spring 2015)

Engaged online with middle/high school students about what it's like to study and have a career in physics

Citywide Senior Center (2012-2014)

Developed a monthly public lecture series, "Mysteries of the Cosmos"

Science in the News (2011-12)

Served on school outreach committee

Harvard Women in Science, Engineering, and Technology (2011-12)

Mentored a female undergraduate computer science major