

Alex Gurvich

CONTACT INFORMATION

Department of Physics & Astronomy
Northwestern University
2145 Tech Drive, F222
Evanston, IL 60208

email agurvich@u.northwestern.edu
website sites.northwestern.edu/alexbgurvich

CURRENT POSITION

Northwestern University	2016 -
Graduate Student	
Blue Waters Graduate Fellow	2018 -
NSF Graduate Fellow	2018 -
IDEAS Fellow	2017 -

EDUCATION

Northwestern University	<i>exp.</i> 2023
Ph.D. Astronomy, Advisor: Claude André Faucher-Giguère	
Northwestern University	2018
M.S. Astronomy	
Carnegie Mellon University	2016
B.Sc. Physics, Astrophysics Track	
GPA: 3.89 · <i>College & University Honors</i>	

PUBLICATIONS

1. **A. Gurvich**, B. Burkhart, and S. Bird. The Effect of AGN Heating on the Low-redshift Ly α Forest. *Apj*, 835:175, February 2017
2. **A. Gurvich** and R. Mandelbaum. The impact of correlated noise on galaxy shape estimation for weak lensing. *MNRAS*, 457:3522–3534, April 2016

RESEARCH EXPERIENCE

1. **Harvard Center for Astrophysics** 2015
Advisors: Blakesley Burkhart, Simeon Bird, Lars Hernquist · measured the effects of magnetic turbulence and the feasibility of its contribution to the ionization state of intergalactic neutral hydrogen as measured by the Lyman-alpha forest using the Illustris simulation.
2. **Carnegie Mellon University** 2014-2015
Advisor: Rachel Mandelbaum · investigated the effect of systematic noise correlation on the estimation of shape parameters of simulated galaxy images with weak gravitational lensing.

GRANTS / FELLOWSHIPS

1. **NSF Graduate Fellowship** 2018-
National Science Foundation Fellowship · recruits high-potential, early-career scientists and engineers and supports their graduate research for three years.
2. **Blue Waters Graduate Fellowship** 2018-
National Center for Supercomputing Applications Fellowship · provides PhD students with a year of support, an allocation of 50,000 node-hours on the powerful Blue Waters petascale computing system, and funds for travel to a Blue Waters Symposium to present research progress and results.
3. **IDEAS Fellowship** 2017-
National Science Foundation Traineeship/Fellowship · supports graduate students in data-enabled science and engineering by offering NSF level graduate funding for one year and offering a battery of interdisciplinary courses in statistics and machine learning. For more information visit ideas.ciera.northwestern.edu.
4. **DSI Data Science Fellowship** 2016-2017
Northwestern University Fellowship · supports first year graduate students dedicated to the exploration of fundamental and

applied advancement in data science as part of the university's Data Science Initiative (DSI). Up to 15 students are awarded this additional funding per year.

5. **NASA Illinois Space Grant Research Program** 2016
State Grant · supports undergraduate and incoming graduate students for a 10 week summer research session before the official start of classes. Up to 10 students are awarded this source of funding per year.

TEACHING EXPERIENCE

1. **Northwestern University** 2017-2018
teaching assistant · Astronomy-120 · taught a weekly lab section using the Dearborn 18.5" refracting telescope. 2017
teaching assistant · Astronomy-101 · taught a weekly lab section using the Dearborn 18.5" refracting telescope. 2018
teaching assistant · Astronomy-111 · taught a weekly lab section using the Dearborn 18.5" refracting telescope. 2018
2. **Pennsylvania Governor's School** 2014
teaching/resident assistant · taught lecture, lab, and elective sections, while also mediating disputes and assisting students in their dormitories as a live-in counselor and administrator.

AWARDS / HONORS

1. **Laws of Star Formation Conference** 2018
Honorable Mention in Poster Competition
2. **Northwestern University, Computational Research Day** 2018
Animated Visualization Competition Grand Prize
3. **Phi Beta Kappa** 2016
National Honor Society
4. **Phi Kappa Phi** 2016
National Honor Society
5. **Andrew Carnegie Society** 2015
University Service & Honor Society
6. **Dean's List High Honors** 2012-2016
Carnegie Mellon University

POSTERS / PRESENTATIONS

1. **Laws of Star Formation** 2018
conference - poster, Vertical Hydrostatic Balance in Galactic Disks from the FIRE Simulations.
2. **Astroviz 2018** 2018
conference - contributed talk, Firefly: A web-based particle viewer
3. **Northwestern University, Seven Minutes of Science** 2017
symposium - invited talk, Exploring the Universe with Computer Simulations
4. **Northwestern University, Computational Research Day** 2017
symposium - poster, Studying Galactic Winds Using High-Resolution Numerical Simulations of Galaxy Evolution
5. **Northwestern University, Illinois Space Grant** 2016
symposium - invited talk, Regulated Star Formation in the FIRE Simulations
6. **Meeting # 227 of the American Astronomical Society** 2016
conference - poster, Magnetic Turbulence and Line Broadening in Simulations of Lyman-Alpha Absorption
7. **Carnegie Mellon University** 2015
symposium - poster, The impact of correlated noise on galaxy shape estimation for weak lensing
8. **Harvard Center for Astrophysics** 2015
symposium - invited talk, Magnetic Turbulence and Line Broadening in Simulations of Lyman-Alpha Absorption

WORKSHOPS ATTENDED

1. **Ready, Set, Go!** 2017
10 week course, science communication and presentation skills, culminated in the development of a TED style lecture.
2. **Scaling to Petascale Institute** 2017
weeklong high performance computing workshop, covered high level parallelism optimization as well as GPU computing, including sessions from NVIDIA staff.

3. **San Diego Supercomputing Center Summer Institute** 2017
weeklong high performance computing workshop, covered parallelism with openMP/MPI, HPC with Python, topics in data science, and GPU computing.

OUTREACH / SERVICE

ONGOING

1. **Physics and Astronomy Graduate Student Council** 2018-
Outreach Committee Co-chair and Treasurer · organized outreach opportunities for the graduate student community. Developed new graduate student peer mentoring program and oversaw operation of rest of council as treasurer and member of the executive council.
2. **Adler Planetarium - Astronomy Conversations** 2017-
volunteer · gave monthly talks at the Adler Planetarium's Space Visualization Lab (SVL) as part of Astronomy Conversations program.
3. **Dearborn Astronomy Nights** 2017-
staff · operated the historic Dearborn Telescope, an 18.5" refractor, at Northwestern's Dearborn Observatory for the weekly public observing sessions.
4. **Firefly** 2016-
developer · acted as a frontend developer for the publicly available simulation visualization app Firefly, working with the goal of creating novel museum exhibits both at the Adler Planetarium and elsewhere. Created a new prototype WebGL version that is currently in development in partnership with the NU Visualization group. You can try it out at ageller.github.io/Firefly.
5. **Astronomy on Tap** 2016-
local organizer · engaged the public at local venues with professional astronomy talks, trivia, and prizes once per quarter as part of a national outreach effort.
6. **CIERA Astronomer Evenings** 2016-
volunteer speaker · developed and delivered talks for the monthly public lectures at Northwestern's Dearborn Observatory.

PAST / ONETIME

1. **Skokie Public Library** 2018
invited speaker · Gave an hourlong invited lecture discussing the formation of cosmic structure and its measurement using Hydrogen absorption lines using the so called "Ly α Forest" to the gathered residents of Skokie township.
2. **Tenth Annual CIERA Public Lecture** 2018
volunteer coordinator and volunteer · Organized the event's "Ask an Astronomer" program which aimed to connect members of the public to CIERA astronomers in an informal and casual setting. Also volunteered as part of that program.
3. **P.E.O. Chapter GC** 2018
invited speaker · Gave an hourlong invited lecture describing the current events in astronomy ranging from landing on comets, discovering exoplanets, to the discovery and analysis of gravitational waves.
4. **Chicago Astronomical Society** 2018
invited speaker · Gave an hourlong invited lecture discussing the formation of cosmic structure and its measurement using Hydrogen absorption lines using the so called "Ly α Forest" to the gathered members of the CAS.
5. **College of DuPage - STEM-CON** 2017
volunteer · operated a booth at the College of DuPage's annual STEM-CON that engaged local families with demonstrations and conversations with STEM professionals in Chicago. Our booth alone had over 500 visitors ranging in ages from (young) children to adults.
6. **Haven Middle School** 2017
invited speaker · presented a talk about using virtual galaxies to explore the universe to the 8th grade science classes as part of a one-off visit to a local middle school.
7. **Wilmette Junior High Science Olympiad: Reach for the Stars** 2016
teacher · drafted lesson plans and taught a class of 5-8th grade students in basic astronomy and stellar evolution at a Chicago junior high school.
8. **Andrew Carnegie Society** 2015-2016
service funding committee member · orchestrated the allocation of funds to service organizations across campus including Habitat for Humanity, a CMU Haiti relief effort, and Doctors without Borders.
9. **Spring Carnival** 2015-2016
head of independent booths · planned and oversaw the construction of the 101st CMU Spring Carnival, a wildly popular event with the local community that engages both members of campus and the city of Pittsburgh.

10. **Society of Physics Students** 2013-2016
president, treasurer · contributed to department culture by organizing annual t-shirt designs and semesterly social events. Developed new set of events and activities with department to welcome incoming first year physics students.
11. **CMU Astronomy Club** 2012-2016
president, vice-president, observatory director · organized and facilitated annual outreach trip for >50 people to Green Bank Observatory to introduce undergraduates interested in astronomy to the fundamentals of radio astronomy. Marketed and hosted observation sessions for the public after meetings and for groups by reservation at the club's Truman Kohman Observatory.