

# Lara Arielle Phillips

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## Experience

Assistant Research Professor, University of Notre Dame, 2009 – present

Co-founded galaxy evolution and large scale structure computational astrophysics group, developed and taught Moreau College Initiative physics program, created and implemented local and international outreach initiatives, created, reimagined and taught courses

Amherst Fellow, Amherst College, 2008 – 2009

Five Colleges Astronomy Department Science Education and Research Fellow, Amherst College, 2005 – 2008

Tolman Fellow and Postdoctoral Scholar, Theoretical Astrophysics and Relativity Group, Division of Physics, Math and Astronomy, California Institute of Technology, 2002 – 2005

Research Assistant (1996– 2001) and Teaching Assistant, 1999, Princeton University

Summer Fellow, Canadian Institute for Theoretical Astrophysics, 1996

Women in Engineering and Science Scholar, Dominion Astrophysical Observatory and Canada France Hawaii Telescope (CFHT), 1992 – 1995

## Education

Ph.D. in Astrophysical Sciences, Princeton University, 2003

Thesis title: WHIMsical Tracings: The X-ray Signature of the Warm/Hot Intergalactic Medium  
Advisor: Professor Jeremiah P. Ostriker

B.Sc., First Class Honors in Physics, Minor in Mathematics, McGill University, Montreal, Canada, 1996

DEC in Pure and Applied Sciences, Collège de Maisonneuve, Montréal, Canada, 1992

Première S, Épreuve française du bac, Lycée Fustel de Coulanges, Yaoundé, Cameroun, 1990

High School Degree, Fine Arts Core Education High School, Montreal, Canada, 1989

## Citizenship

Canada, France

Languages	English and French
Grants	<p>Explore and Create Grant, Canada Council for the Arts, see description in Outreach, 2019</p> <p>Fulk Family Foundation grant, see description in Teaching, 2018</p> <p>Luksic Collaboration Grant, to travel to Chile and film High Z Supernova Search Team members as well as build collaborations with the Astronomy faculty at the Pontificia Universidad Católica de Chile, \$8,400</p> <p>Co-authored and awarded two Institute for Scholarship in the Liberal Arts Large Grant for Research and Creative Work for \$14,995 and \$13,885</p> <p>Provost's Initiatives on Team Teaching grant, "Science Play: Physics on the Stage" 2010 – 2014, \$3000 and on Building Intellectual Community, "Designing Information", 2010 – 2011, \$8750</p>
Fellowships and Awards	<p>Tolman Postdoctoral Fellowship, California Institute of Technology, 2003 – 2005</p> <p>Prize Postdoctoral Fellowship, California Institute of Technology, 2002 – 2003</p> <p>Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship, 1999 – 2002</p> <p>Amelia Earhart Fellowship, awarded by Zonta International to women in Aerospace Engineering related sciences, 1999</p> <p>Fonds pour la Formation de Chercheurs et l'Aide à la Recherche Research Scholarship, 1996</p> <p>McConnell Scholarship, 1992 – 1996</p> <p>Canada Scholar Fellowship, 1992 – 1996</p> <p>Women in Engineering and Science Scholarship, awarded to 25 recipients by the National Research Council Canada, 1992 – 1995</p> <p>Collège de Maisonneuve Prize, 2nd place, 1992</p> <p>Coloured Women's Club of Montreal 90<sup>th</sup> Anniversary Award, 1992</p> <p>Fine Arts Core Education High School, five prizes including Theatre and Mathematics, 1989</p>
Talks, Panels, Residencies (Selected)	<p><i>High Z Project</i>, Boca Del Lupo Residency, Vancouver, BC, October 29 – November 10, 2018</p> <p><i>High Z Project</i>, Princeton University Residency, Princeton, NJ, June 2018</p> <p>Panelist in <i>Challenging Assumptions About What's Possible: Innovation In and Outside of the Classroom</i> session, BPI Convening of the Consortium for the Liberal Arts in Prison, 2018</p> <p><i>Overlooked genius: perspectives from teaching Physics at the Westville Correctional Facility</i>, FEMMSS6, Notre Dame, IN, 2016</p> <p><i>What's Your Time? Is it warped, crunched, or relative?</i>, Our Universe Revealed, University of Notre Dame, 2016</p> <p><i>In the Neighborhood Of Galaxies, Nobel Laureates and Gummy Worms</i>, Seminar, Adler Planetarium, May 2014</p> <p><i>Echos of the Big Bang: What the Cosmic Microwave Background Reveals about the Past and Future Universe</i>, Indiana University South Bend, April 2014</p> <p><i>The Universe in a Box: What simulations and observations of large scale structure reveal about the evolution of our universe</i>, Public talk, Valparaiso University, February 2014</p>

*Galaxy Evolution in the Neighborhood*, Physics and Astronomy Colloquium, Valparaiso University, February 2014

## Leadership

**Mentor, Building Bridges Program**, a program for first generation college students at the University of Notre Dame, 2018 – present

**Chair, Department of Physics Outreach Committee**, introduced graduate and undergraduate student representation, obtained budget for the committee, fostered and supported new collaborative initiatives, including a public physics lecture series, a graduate demo team, solar eclipse events, 2011 – present

**Member, Physics Diversity Committee**, collaborating on a best practices document that will address hiring, promotions, awards, admissions, and the classroom, 2017 – present

Department representative, National Society of Black Physicists Meeting, 2017

Seeking Educational Equity and Diversity (SEED) Cohort, 2016 – 2017

Member, Designing Information Group, funded through the Provost' Initiative on Building Intellectual Community, 2011

Member, Colloquium committee, University of Notre Dame Physics department, 2010 – 2011

Member of the Ad Hoc Science Planning Committee, Amherst College, 2007 – 2009

Organizing Committee, Computational Research in Princeton Lecture Series, 1998

Organizer, Astrophysical Sciences Department graduate lunchtime seminar series 1998 – 1999

President's Standing Committee on the Status of Women, Princeton University, 1997 – 1999

Société des Innovateurs, Québec, 1995 – 1997

Student Representative, Physics Undergraduate Curriculum Committee and Physics Hiring Committee, McGill University, 1995 – 1996

President of McGill Society of Physics Students, 1995 – 1996

## Teaching

Courses taught at the University of Notre Dame: PHYS 10240 *Elementary Cosmology*<sup>†</sup> (Fall 2009 and 2010), PHYS 10222 *Physics of Civilization*<sup>\*†</sup> (Spring 2010 – 2016), PHYS 10555 *Science Play*<sup>†</sup> (Provost Initiative on Team Teaching, Fall 2010\*, Spring 2011\*, Spring 2014), PHYS 20481 *Introduction to Astronomy & Astrophysics*<sup>†</sup> (Fall 2011 – 2015), PHYS 11411 Freshman Labs\*(Fall 2011 – 2012), *Advanced Astrophysics*<sup>†</sup> (Fall 2016 – 2018), *Descriptive Astronomy*<sup>†</sup> (Spring 2017- present) \* indicates courses taught with an increased teaching load, † indicates a course I developed.

Moreau College Initiative Physics Program, developed and taught a Physics and Astronomy program (three courses and one lab) at the Westville Correctional Facility (the program was awarded a grant from the Fulk Family Foundation to build and deploy labs I designed for two of the courses,) 2014 – present

*Astronomy: Investigating Our Universe*, a University of Notre Dame Pre-College track, developed and taught in collaboration with Dr. Keith Davis (Summer 2016 - present)

Kaneb Reading group participant (*Contemplative Practices in Higher Education* by Barbezat and Bush, and *Teaching to Transgress: Education as the Practice of Freedom* by bell hooks) and facilitator (*Teaching and Learning STEM* by Felder and Brent) 2015 – present

Courses Taught at Amherst College, 2005 – 2009: AST 12 *The Unseen Universe*, AST 15 *Science Play: Astronomy and Physics on the Stage*<sup>†</sup>, AST 57 *Astroparticle Physics*<sup>†</sup>, portions of AST 11 *Introduction to Astronomy*, and AST 26 *Cosmology*  
Teaching Assistant, Princeton University, AST 203 *The Universe*, taught by Professors J. Richard Gott, Michael Strauss, and Neil deGrasse Tyson, 1999

#### Mentoring

Class Advisor for Physics Majors class of 2017 (2014 – 2017,) and 2021 (2018 – present)  
Jared Coughlin '18 (University Notre Dame), graduate co-advisor with Prof. Grant Mathews  
Ali Snedden '15 (University Notre Dame), graduate co-advisor with Prof. J. Christopher Howk  
Undergraduate Research Supervisor, Physics majors and REU, University of Notre Dame, 2010 – present  
Sophomore Seminar speaker, 2013 – present  
American Women in Science (AWIS) panelist and poster judge  
Undergraduate Research Supervisor, Amherst College, 2007 – 2009  
Physics Workshop Supervisor, Caltech Freshman Summer Institute, 2003  
Student Peer Advisor, McGill University, 1995 – 1996

#### Consultation and Review

Proposal Review, National Science Foundation, 2017, 2020  
*Nature* article referee, 2015  
Collaborator, proposed NSF Science and Technology Center, “Massive Black Holes in the Universe”, a Princeton University based center, 2011  
Reviewer, *Pathways to Astronomy* by Schneider and Arny, review of LearnSmart probes for McGraw-Hill, 2011  
Reviewer, *Cosmology* by George Greenstein for Cambridge University Press, 2010  
Consultant, *Interactive Astronomy* multimedia instructional package, 2008 – 2009  
Collaborator, PHAROS, a soft X-ray spectroscopic mission to be proposed to the NASA SMEX program  
Chandra Cycle 9 Review Panel, 2007  
Collaborator, Missing Baryon Explorer (MBE), a proposed soft X-ray spectroscopic mission  
Full member of American Astronomical Society (AAS), current  
Member, National Society of Black Physicists

#### Outreach

Member and co-producer of an artistic collaboration High Z, a project to create a hybrid installation based on the 2011 Nobel Prize winning discovery of the accelerating universe, (the project was recently awarded an Explore and Create Grant by the Canada Council for the Arts,) 2012 – present

Design and deployment of immersive science experiences, bringing science to thousands of children and adults (Science Alive, Celebrate Science Indiana, Digital Sky Academy, Expand Your Horizons, Art2Science camp, Theatre2Science camp, PAN talks and reception, Michiana Star Party, Astroblast, and BACKBEATS, a collaboration between percussionists, engineers and physicists) 2011 – present

Director of 2012 Notre Dame Transit of Venus activities that reached over 3000 members of the greater South Bend Community, through concerts, museum displays, lectures, drawing activities, and observation of the event through telescopes and solar glasses on the day

College of Science reception for Big Picture Science hosts, Organizer, February 2015

Dr. Brian Schmidt visit to the University of Notre Dame (first visit to a US institution after his 2011 Nobel Prize), Organizer, February 2012

Master Class on Exoplanets, design and implementation in the classroom in collaboration with Quarknet, 2011 – present

Science plays readings off campus and open to the community, Organizer, 2011

Nuclear Lab project, design of and consultation for animations for a Nuclear astrophysics movie for the DVT, 2009 – 2014

Planning of Outreach Center at Amherst College Observatory, 2008 – 2009

Talks in schools, Société des Innovateurs, Québec, 1995

Publications  
(Selected)

Coughlin, J., Mathews, G.J., **Phillips, L.A.**, Snedden, A. & Suh, I.-S., *Probing Time-Dependent Dark Energy with the Flux Power Spectrum of the Lyman Alpha Forest*, ApJ, 874, 11 (2019)

Snedden, A., Coughlin, J., **Phillips, L. A.**, Mathews, G. J., & Suh, I.-S., *Star Formation and Gas Phase History of the Cosmic Web*, Mon. Not. Roy. Astron. Soc. 455, 2804 (2016)

Snedden, A., **Phillips, L. A.**, Mathews, G. J., Coughlin, J., Suh, I.-S., and Bhattacharya, A., *A New Multi-Scale Structure Finding Algorithm to Identify Cosmological Structure*, J. Comp. Phys, 299, 92 (2015), arXiv:1409.7711

Mathews, G.J., Snedden, A., **Phillips, L. A.**, Suh, I. S., Coughlin, J., Bhattacharya, A., Zhao, X., & Lan, N. Q., *Origin and Evolution of Structure and Nucleosynthesis for Galaxies in the Local Group*, MPLA, 29, 1430012 (2014)