

Adrienne L. Erickcek

Associate Professor
Department of Physics & Astronomy
University of North Carolina
Phillips Hall, CB 3255
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Website: <http://www.physics.unc.edu/~erickcek>

May 27, 2022

EDUCATION

*Sept. 2004-
June 2009* CALIFORNIA INSTITUTE OF TECHNOLOGY
Ph.D. in Physics
Thesis: “The Consequences of Modifying Fundamental Cosmological Theories”
Advisor: Prof. Marc Kamionkowski

*Oct. 2003-
June 2004* UNIVERSITY OF CAMBRIDGE
Master of Advanced Study in Mathematics *with Distinction*

*Sept. 1999-
June 2003* PRINCETON UNIVERSITY
Bachelor of Arts in Physics *summa cum laude*
Thesis: “A New Constraint on Strongly Interacting Dark Matter from X-Ray
Quantum Calorimetry”
Advisor: Prof. Paul Steinhardt

PROFESSIONAL EXPERIENCE

*July 2013-
present* UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
DEPARTMENT OF PHYSICS AND ASTRONOMY
Assistant Professor; July 2013 – July 2019
Associate Professor; July 2019 – present

*Sept. 2009-
Aug. 2013* CANADIAN INSTITUTE FOR THEORETICAL ASTROPHYSICS
PERIMETER INSTITUTE FOR THEORETICAL PHYSICS
Joint CITA/PI Postdoctoral Fellow; Sept. 2009 – Aug. 2011
CIFAR Global Scholar in Cosmology and Gravitation; Sept. 2011 – Aug. 2013

HONORS

2018 NSF Faculty Early Career Development (CAREER) award
2011 CIFAR Junior Fellowship in Cosmology and Gravitation
2009 Stemple Memorial Prize in Physics (Caltech)
2009 Everhart Lecturer (Caltech)
2007 PEO Scholar Award
2003 NSF Graduate Fellowship
2003 Churchill Scholarship to Cambridge University
2003 Sigma Xi Book Award in Physics (Princeton University)
2003 The Allen G. Shenstone Prize in Physics (Princeton University)
2002 Barry M. Goldwater Scholarship
2002 elected to Phi Beta Kappa
2002 The George B. Wood Legacy Junior Prize (Princeton University)

BIBLIOGRAPHY

INSPIRE Citation Statistics: 2415 total citations, h-index = 26.

Current and former members of my research group at UNC are shown in boldface.

* denotes alphabetized author list

Refereed Articles

- ***Adrienne L. Erickcek**, Pranjal Raleganker, and Jessie Shelton. “Cannibalism’s lingering impact on the matter power spectrum.” *Journal of Cosmology and Astroparticle Physics* **2022** 017 (2022). [arXiv:2106.09041]. (53 pages)
- ***Adrienne L. Erickcek**, Pranjal Raleganker, and Jessie Shelton. “Cannibal domination and the matter power spectrum.” *Physical Review D* **103**, 103508 (2021). [arXiv:2008.04311]. (11 pages)
- *Rouzbeh Allahverdi, Mustafa A. Amin...**M. Sten Delos**, **Adrienne L. Erickcek**, et al. “The First Three Seconds: a Review of Possible Expansion Histories of the Early Universe.” *Open J. Astrophys.* **4** (2021). [arXiv:2006.16182]. (67 pages)
- **M. Sten Delos**, Tim Linden, and **Adrienne L. Erickcek**. “Breaking a dark degeneracy: The gamma-ray signature of early matter domination.” *Physical Review D* **100**, 123546 (2019). [arXiv:1910.08553]. (25 pages)
- **Carisa Miller**, **Adrienne L. Erickcek**, and Riccardo Murgia. “Constraining nonthermal dark matter’s impact on the matter power spectrum.” *Physical Review D* **100**, 123520 (2019). [arXiv:1908.10369]. (15 pages)
- *Carlos Blanco, **M. Sten Delos**, **Adrienne L. Erickcek**, and Dan Hooper. “Annihilation signatures of hidden sector dark matter within early-forming microhalos.” *Physical Review D* **100**, 103010 (2019). [arXiv:1906.00010]. (15 pages)
- **M. Sten Delos**, **Margie Bruff**, and **Adrienne L. Erickcek**. “Predicting the density profiles of the first halos.” *Physical Review D* **100**, 023523 (2019). [arXiv:1905.05766]. (25 pages)
- **M. Sten Delos**, **Adrienne L. Erickcek**, **Avery P. Bailey**, and Marcelo A. Alvarez. “The density profiles of ultracompact minihalos: implications for constraining the primordial power spectrum.” *Physical Review D* **98**, 063527 (2018). [arXiv:1806.07389]. (26 pages)
- **Kayla Redmond**, **Anthony Trezza**, and **Adrienne L. Erickcek**. “Growth of Dark Matter Perturbations during Kination.” *Physical Review D* **98**, 063504 (2018) [arXiv:1807.01327]. (12 pages)
- **M. Sten Delos**, **Adrienne L. Erickcek**, **Avery P. Bailey**, Marcelo A. Alvarez. “Are ultracompact minihalos really ultracompact?” *Phys. Rev. D Rapid Communications* **97**, 041303(R) (2018) [arXiv:1712.05421]. (7 pages)
- **Kayla Redmond** and **Adrienne L. Erickcek**. “New Constraints on Dark Matter Production during Kination.” *Phys. Rev. D* **96**, 043511 (2017). [arXiv:1704.01056]. (11 pages)
- **Issac Raj Waldstein**, **Adrienne L. Erickcek**, and **Cosmin Ilie**. “A Quasi-Decoupled State for Dark Matter in Non-Standard Thermal Histories.” *Phys. Rev. D* **95**, 123531 (2017). [arXiv:1609.05927] (8 pages)
- **Issac Raj Waldstein** and **Adrienne L. Erickcek**. “Comment on ‘Kinetic decoupling of WIMPs: Analytic expressions.’” *Phys. Rev. D* **95**, 088301 (2017). [arXiv:1707.03417]. (3 pages)
- **Carisa Miller** and **Adrienne L. Erickcek**. “Quartic chameleons: Safely scale-free in the early Universe.” *Phys. Rev. D* **94**, 104049 (2016). [arXiv:1607.07877]. (13 pages)

- ***Adrienne L. Erickcek**, Kuver Sinha, and Scott Watson. “Bringing Isolated Dark Matter Out of Isolation: Late-time Reheating and Indirect Detection.” *Phys. Rev. D* **94**, 063502 (2016). [arXiv:1510.04291]. (9 pages)
- Saroj Adhikari, Sarah Shandera, and **Adrienne L. Erickcek**. “Large-scale anomalies in the cosmic microwave background as signatures of non-Gaussianity.” *Phys. Rev. D* **93**, 023524 (2016) [arXiv:1508.06489] (21 pages)
- **Adrienne L. Erickcek**. “The Dark Matter Annihilation Boost from Low-Temperature Reheating.” *Phys. Rev. D* **92**, 103505 (2015). [arXiv:1504.03335] (26 pages)
- **Adrienne L. Erickcek**, Neil Barnaby, Clare Burrage, and Zhiqi Huang. “Chameleons in the early universe: kicks, rebounds, and particle production.” *Phys. Rev. D* **89**, 084074 (2014). [arXiv:1310.5149]. (28 pages)
- Naoya Kobayashi, Takeshi Kobayashi, **Adrienne L. Erickcek**. “Rolling in the modulated reheating scenario.” *Journal of Cosmology and Astroparticle Physics* **2014**, 036 (2014). [arXiv:1308.4154]. (27 pages)
- Sarah Shandera, **Adrienne L. Erickcek**, Pat Scott, and Jhon Yana Galarza. “Number counts and non-Gaussianity.” *Phys. Rev. D* **88**, 103506 (2013). [arXiv:1211.7361]. (19 pages)
- **Adrienne L. Erickcek**, Neil Barnaby, Clare Burrage, and Zhiqi Huang. “Catastrophic consequences of kicking the chameleon.” *Phys. Rev. Lett*, **110**, 171101 (2013). [arXiv:1304.0009]. (5 pages)
- Jens Chluba, **Adrienne L. Erickcek**, and Ido Ben-Dayan. “Probing the inflaton: Small-scale power spectrum constraints from measurements of the CMB energy spectrum.” *Astrophysical Journal* **758**, 76 (2012). [arXiv:1203.2681] (14 pages)
- Fangda Li, **Adrienne L. Erickcek**, and Nicholas M. Law. “A new probe of the small-scale primordial power spectrum: astrometric microlensing by ultracompact minihalos.” *Phys. Rev. D* **86**, 043519 (2012). [arXiv:1202.1284] (17 pages)
- **Adrienne L. Erickcek** and Kris Sigurdson. “Reheating effects in the matter power spectrum and implications for substructure.” *Phys. Rev. D* **84**, 083503 (2011). [arXiv:1106.0536] (20 pages)
- **Adrienne L. Erickcek** and Nicholas M. Law. “Astrometric microlensing by local dark subhalos.” *Astrophysical Journal* **729**, 49 (2011) [arXiv:1007.4228] (17 pages)
- **Adrienne L. Erickcek**, Christopher M. Hirata, and Marc Kamionkowski. “A scale-dependent power asymmetry from isocurvature perturbations.” *Phys. Rev. D* **80**, 083507 (2009). [arXiv:0907.0705] (18 pages)
- **Adrienne L. Erickcek**, Sean M. Carroll, and Marc Kamionkowski. “Superhorizon perturbations and the cosmic microwave background.” *Phys. Rev. D* **78**, 083012 (2008). [arXiv:0808.1570] (11 pages)
- **Adrienne L. Erickcek**, Marc Kamionkowski, and Sean M. Carroll. “A hemispherical power asymmetry from inflation.” *Phys. Rev. D* **78**, 123520 (2008). [arXiv:0806.0377] (5 pages)
- Tristan L. Smith, **Adrienne L. Erickcek**, Robert R. Caldwell, and Marc Kamionkowski. “Effects of Chern-Simons gravity on bodies orbiting the Earth.” *Phys. Rev. D* **77**, 024015 (2008). [arXiv:0708.0001] (9 pages)
- **Adrienne L. Erickcek**, Paul J. Steinhardt, Dan McCammon, and Patrick C. McGuire. “Constraints on the interactions between dark matter and baryons from the x-ray quantum calorimetry experiment.” *Phys. Rev. D* **76**, 042007 (2007). [arXiv:0704.0794] (15 pages)

- Takeshi Chiba, Tristan L. Smith, and **Adrienne L. Erickcek**. “Solar System constraints to general $f(R)$ gravity.” *Phys. Rev. D* **75**, 124014 (2007). [arXiv:astro-ph/0611867] (7 pages)
- **Adrienne L. Erickcek**, Tristan L. Smith, and Marc Kamionkowski. “Solar System tests *do* rule out $1/R$ gravity.” *Phys. Rev. D Rapid Communications* **74**, 121501(R) (2006). [arXiv:astro-ph/0610483] (4 pages)
- **Adrienne L. Erickcek**, Marc Kamionkowski, and Andrew J. Benson. “Supermassive black hole merger rates: uncertainties from halo merger theory.” *Mon. Not. Roy. Ast. Soc.* **371**, 1992-2000 (2006). [arXiv:astro-ph/0604281]
- Mark A. Scheel, **Adrienne L. Erickcek**, Lior M. Burko, Lawrence E. Kidder, Harald P. Pfeiffer, and Saul A. Teukolsky. “3D simulations of linearized scalar fields in Kerr spacetimes.” *Phys. Rev. D* **69**, 104006 (2004). [arXiv:gr-qc/0305027] (12 pages)

Non-Refereed Articles and Conference Proceedings

- Keith Bechtol, Simon Birrer, Francis-Yan Cyr-Racine, Katelin Schutz, Susmita Adhikari, Arka Banerjee, Simeon Bird, Nikita Blinov, Kimberly K. Boddy, Celine Boehm, Kevin Bundy, Malte Buschmann, Sukanya Chakrabarti, David Curtin, Liang Dai, Alex Drlica-Wagner, Cora Dvorkin, **Adrienne L. Erickcek**, Daniel Gilman, Saniya Heeba, Stacy Kim, Vid Iršič, Alexie Leauthaud, Mark Lovell, Zarija Lukić, Yao-Yuan Mao, Sidney Mau, Andrea Mitridate, Philip Mocz, Julian B. Muñoz, Ethan O. Nadler, Annika H. G. Peter, Adrian Price-Whelan, Andrew Robertson, Nashwan Sabti, Neelima Sehgal, Nora Shipp, Joshua D. Simon, Rajeev Singh, Ken Van Tilburg, Risa H. Wechsler, Axel Widmark, Hai-Bo Yu. “Snowmass2021 Cosmic Frontier White Paper: Dark Matter Physics from Halo Measurements.” Contribution to Snowmass 2021. (2022) [arXiv:2203.07354] (88 pages)
- *Arka Banerjee, Kimberly K. Boddy, Francis-Yan Cyr-Racine, **Adrienne L. Erickcek**, Daniel Gilman, Vera Gluscevic, Stacy Kim, Benjamin V. Lehmann, Yao-Yuan Mao, Philip Mocz, Ferah Munshi, Ethan O. Nadler, Lina Necib, Aditya Parikh, Annika H. G. Peter, Laura Sales, Mark Vogelsberger, Anna C. Wright. “Snowmass2021 Cosmic Frontier White Paper: Cosmological Simulations for Dark Matter Physics.” Contribution to Snowmass 2021. (2022) [arXiv:2203.07049] (43 pages)
- Kimberly K. Boddy, Mariangela Lisanti, Samuel D. McDermott, Nicholas L. Rodd, Christoph Weniger, Yacine Ali-Haïmoud, Malte Buschmann, Ilias Cholis, Djuna Croon, **Adrienne L. Erickcek**, Vera Gluscevic, Rebecca K. Leane, Siddharth Mishra-Sharma, Julian B. Muñoz, Ethan O. Nadler, Priyamvada Natarajan, Adrian Price-Whelan, Simona Vegetti, Samuel J. Witte. “Astrophysical and Cosmological Probes of Dark Matter.” Contribution to Snowmass 2021. (2022) [arXiv:2203.06380] (24 pages)
- ***Adrienne L. Erickcek**, Tathagata Ghosh, Jayden Newstead, and Hasan Serce. “A summary of the CETUP* 2016 dark matter workshop discussion sessions.” AIP Conf. Proc. **1900** 040010 (2017). (11 pages)
- **Adrienne L. Erickcek** and Isaac Raj Waldstein. “The early Universe’s imprint on dark matter.” AIP Conf. Proc. **1900** 040005 (2017). (8 pages)
- The Theia Collaboration: Celine Boehm, Alberto Krone-Martins, Antonio Amorin, Guillem Anglada-Escude, ... **Adrienne Erickcek** ..., Rosemary Wyse. “Theia: Faint objects in motion or the new astrometry frontier.” [arXiv:1707.01348] (55 pages)
- Bhuvnesh Jain, Austin Joyce, Rodger Thompson, Amol Upadhye, James Battat, Philippe Brax, Anne-Christine Davis, Claudia de Rham, Scott Dodelson, **Adrienne Erickcek**, Gregory Gabadadze, Wayne Hu, Lam Hui, Dragan Huterer, Marc Kamionkowski, Justin Khoury, Kazuya

Koyama, Baojiu Li, Eric Linder, Fabian Schmidt, Roman Scoccimarro, Glenn Starkman, Chris Stubbs, Masahiro Takada, Andrew Tolley, Mark Trodden, Jean-Philippe Uzan, Vinu Vikram, Amanda Weltman, Mark Wyman, Dennis Zaritsky, Gongbo Zhao. “Novel Probes of Gravity and Dark Energy.” Report from the “Dark Energy and CMB working group for the APS Long Term Planning Exercise (“Snowmass”) 2013. [arXiv:1309.5389] (24 pages)

TEACHING EXPERIENCE

UNIVERSITY OF NORTH CAROLINA CHAPEL HILL

- Spring 2022* PHYS 118 Introductory Calculus-based Mechanics and Relativity (209 students)
 Co-instructor: Jonathan Engel
- Fall 2021* ASTR 202 Introduction to Astrophysics (19 students)
- Spring 2021* ASTR 504 Cosmology (4 students)
 ASTR 704 Cosmology (7 students)
- Fall 2019* PHYS 118 Introductory Calculus-based Mechanics and Relativity (247 students)
 Co-instructor: Jianping Lu
- Spring 2019* PHYS 118.502 Introductory Calculus-based Mechanics and Relativity (45 students)
 ASTR 504 Cosmology (9 students)
 ASTR 704 Cosmology (1 student)
- Fall 2018* PHYS 118.503 Introductory Calculus-based Mechanics and Relativity (45 students)
- Fall 2017* ASTR 202 Introduction to Astrophysics (16 students)
 ASTR 301 Stars, Galaxies, and Cosmology (9 students)
- Spring 2017* ASTR 504 Cosmology (12 students)
 ASTR 704 Cosmology (6 students)
- Fall 2016* ASTR 102 Introduction to Astronomy: Stars, Galaxies, and Cosmology
 Co-instructor: Sheila Kannappan (11 students)
- Fall 2015* ASTR 301 Stars, Galaxies, and Cosmology (15 students)
 ASTR 102 Introduction to Astronomy: Stars, Galaxies, and Cosmology
 Co-instructor: Sheila Kannappan (18 students)
- Spring 2015* ASTR 301 Stars, Galaxies, and Cosmology (21 students)
 ASTR 504 Cosmology (6 students)
 ASTR 704 Cosmology (4 students)
- Fall 2014* ASTR 301.001 Stars, Galaxies, and Cosmology (17 students)
 ASTR 301.002 Stars, Galaxies, and Cosmology (8 students)
- Spring 2014* PHYS 391 Senior Seminar (3 students)
 ASTR 704 Cosmology (7 students)

POSTDOCS SUPERVISED

Cosmin Ilie (September 2014 - July 2016)

GRADUATE STUDENTS SUPERVISED

- Hwan Bae: started Fall 2019
Alexander Sobotka: started Fall 2019
A. Turchaninova: started Fall 2019
Isaac Raj Waldstein: started Fall 2014, expected completion of Ph.D. Summer 2022
 Thesis proposal approved May 2020
M. Sten Delos: started Fall 2016; Ph.D. May 2020
Carisa Miller: started Fall 2014; Ph.D. May 2020
Kayla Redmond: started Fall 2014; M.A. May 2018, Ph.D. May 2019

UNDERGRADUATE SENIOR THESES SUPERVISED

Charlie Mace: April 2020

“Simulating the Thermal Evolution of Dark Matter During an Early Matter-Dominated Era”

Sheridan Green: April 2017

“Constraining an Early Matter-Dominated Era through Cosmological Simulations”

UNDERGRADUATE STUDENTS SUPERVISED

Stratton, Madeline, UNC, PHYS 395 Spring 2020

Charlie Mace, UNC, PHYS 295 Spring 2019, Honors Thesis, September 2019-April 2020

Jordan Sheely, UNC, PHYS 295 Spring 2019, PHYS 395 Fall 2019

Margie Bruff, UNC, PHYS 295 Spring 2018, Fall 2018, PHYS 395 Spring 2019

Sheridan Green, UNC, PHYS 295 Fall 2015, Honors Thesis, September 2016-April 2017

Autumn Ficker, UNC, PHYS 295 Spring 2017

Erin Conn, UNC, PHYS 295 Fall 2016

Anthony Trezza, UNC, PHYS 295 Fall 2015

Avery Bailey, University of Virginia, CAP REU Participant, May-August, 2015

Lucas deHart, UNC, funded by NC Space Grant, January-August, 2015

Joshua Horowitz, UNC, funded by NSF PHY-1417446, January-August, 2015

Kate Storey-Fisher, Brown University, CAP REU Participant May-August, 2014

Dayton Ellwanger, UNC, funded by start-up, September 2013- August 2014

Nick Priore, UNC, PHYS 482L Spring 2014

Ansel Dow, UNC, January-May 2014

Michael Winer, University of Guelph, CITA Summer Student, May-August 2013

Matus Rybak, St. Andrews University, PI Summer Student, May-August 2012

Fangda Li, University of Toronto, CITA Summer Student, May-August 2011

EXTERNAL FUNDING

August 1, 2018- NATIONAL SCIENCE FOUNDATION

July 31, 2023 Award No. PHY-1752752

PI: Adrienne Erickcek

“CAREER: Illuminating the Early Universe with Dark Matter”

Jan. 1, 2018- NASA FERMI GUEST INVESTIGATOR CYCLE 10

June. 30, 2019 Award No. 80NSSC17K0751

PI: Adrienne Erickcek

“Using Fermi Dark Matter Annihilation Constraints to Probe the Early Universe”

August 1, 2014- NATIONAL SCIENCE FOUNDATION

July 31, 2018 Award No. PHY-1417446

PI: Adrienne Erickcek

“Using Dark Matter Microhalos to Probe the Universe's First Second”

PROFESSIONAL SERVICE

Departmental Service:

Spring 2022 APS Bridge Partnership Committee (co-chair)

Undergraduate academic advisor

Fall 2021 APS Bridge Partnership Committee (co-chair)

Undergraduate Affairs & Studies Committee

Undergraduate academic advisor

Spring 2021 APS Bridge Partnership Committee (co-chair)

	Undergraduate Affairs & Studies Committee
<i>AY 2019-2020</i>	APS Bridge Partnership Committee (co-chair) Undergraduate Affairs & Studies Committee (co-chair)
	Pre-candidacy Advising Committee
<i>AY 2018-2019</i>	APS Bridge Partnership Committee (co-chair) Graduate Affairs & Studies Committee
<i>Spring 2018</i>	Astronomy Faculty Search Committee
<i>Fall 2017</i>	APS Bridge Partnership Committee (co-chair) Astronomy Faculty Search Committee Graduate Affairs & Studies Committee
	Target of Opportunity Hiring Committee
<i>AY 2016-2017</i>	APS Bridge Partnership Committee (co-chair) Astronomy Faculty Search Committee Diversity Committee
	Graduate Affairs & Studies Committee
<i>Fall 2015</i>	Colloquia Committee Graduate Affairs & Studies Committee
<i>AY 2014-2015</i>	Graduate Recruiting Committee Doctoral Written Exam Committee
<i>AY 2013-2014</i>	Graduate Recruiting Committee (co-chair) Graduate Retention and Diversity Committee

Exam Committees:

Ph.D. Committee: Kathleen Eckert (S. Kannappan's student)
Ph.D. Committee: Thomas Osburn (C. Evans' student)
Ph.D. Committee: Zachary Nasipak (C. Evans' student)
Ph.D. Committee: Casey Berger (J. Drut's student)
Ph.D. Committee: Zack Hutchens (S. Kannappan's student)
Ph.D. Committee: Derrick Carr (S. Kannappan's student)
Ph.D. Committee: Mugdha Polimera (S. Kannappan's student)
Masters Committee: Zachary Nasipak (C. Evans' student)
Masters Committee: John Dupuy (F. Heitsch's student)

Interdepartmental Service:

<i>Spring 2022</i>	Educational Policy Committee General Education Oversight Committee
<i>Fall 2021</i>	Churchill Scholar Nomination Committee (chair) Educational Policy Committee General Education Oversight Committee
<i>Spring 2021</i>	Educational Policy Committee General Education Oversight Committee
<i>Spring 2020</i>	Educational Policy Committee General Education Oversight Committee
<i>Fall 2019</i>	Churchill Scholar Nomination Committee (chair) Educational Policy Committee
<i>Fall 2018</i>	Churchill Scholar Nomination Committee
<i>Fall 2017</i>	Churchill Scholar Nomination Committee
<i>Fall 2016</i>	Churchill Scholar Nomination Committee
<i>Fall 2015</i>	Churchill Scholar Nomination Committee
<i>Fall 2013</i>	Churchill Scholar Nomination Committee

External Service:

NSF High Energy Theory/Cosmology Review Panel
NSF Astronomy CAREER Review Panel
NASA Astrophysics Theory Review Panel
Churchill Scholar National Selection Committee

Referee:

Physical Review D, Physical Review Letters, Journal of Cosmology and Astroparticle Physics, European Physics Letters, Nature Physics, Monthly Notices of the Royal Astronomical Society

Outreach:

- Speaker at “Shadow a Scientist” virtual visit to local high school; April 29, 2022.
- Hosted the September 2021 Morehead Teen Science Café: “Big Bang 101.” Chapel Hill, NC September 10, 2021.
- Speaker at the UNC Program in the Humanities and Human Values Adventures in Ideas Seminar: “Conceptions of Time from the Big Bang to Daylight Saving.” June 26, 2021.
- Speaker at “Shadow a Scientist” virtual visit to local high school; March 11, 2021.
- Speaker at “Astronomy on Tap: The Beginning and End of the Universe.” Durham, NC; February 6, 2018.
- Speaker at the UNC Program in the Humanities and Human Values Adventures in Ideas Seminar: “The Art of Science and the Science of Art.” Chapel Hill, NC; November 19, 2016
- Speaker at the UNC Program in the Humanities and Human Values Adventures in Ideas Seminar: “Earth, the Arts, and the Meaning of Nature.” Chapel Hill NC; July 11, 2015.
- Hosted the July 2015 Carolina Science Café: “Big Bang 101.” Chapel Hill, NC.
- Speaker at the Spring 2014 Symposium on Horizons in Astronomy and Physics Education (SHAPE). Chapel Hill, NC. May 3, 2014.
- Other Public Lectures:
 - Chapel Hill Astronomical & Observational Society; Chapel Hill, NC; November 10, 2015
 - Hawbridge School, Saxapahaw NC: November 6, 2015
 - Hawbridge School, Saxapahaw NC: May 14, 2014.
 - Mississauga Centre of the Royal Astronomical Society of Canada: Mississauga, ON; May 25, 2012.
 - Astronomy Public Tours, University of Toronto. Toronto, ON; September 6, 2012.
- Guided high-school students through a four-day investigation of dark matter as part of the International Summer School for Young Physicists at the Perimeter Institute. July 2012.

INVITED CONFERENCE AND SEMINAR PRESENTATIONS

- “Dark Matter in the Universe,” 7th Symposium on Neutrinos and Dark Matter in Nuclear Physics; Asheville, NC; May 2022.
- “What microhalos can tell us about the origins of dark matter,” The Particle Frontier Aspen Center for Physics Winter Conference; Aspen, CO; March 2022.
- “Cosmology of Early Matter Domination,” Plenary Talk at PPC 2021: XIV International Workshop on Interconnections between Particle Physics and Cosmology; Virtual conference; May 2021.
- “Illuminating the Early Universe with Dark Matter Minihalos,” University of Pennsylvania High Energy Theory Seminar; Remote presentation; March 2021.
- “Illuminating the Early Universe with Dark Matter Minihalos,” University of Southern California Cosmology Seminar; Remote presentation; February 2021.

- “What the matter power spectrum can tell us about dark matter and the Universe’s first second,” KITP Workshop: From Inflation to the Hot Big Bang; Santa Barbara, CA; February 2020.
- “The Early Universe’s Imprint on Dark Matter,” KITP Conference: Inflationary Reheating Meets Particle Physics Frontier; Santa Barbara, CA; February 2020.
- “Illuminating the Early Universe with Dark Matter Minihalos,” High Energy Theory Seminar, University of Michigan; Ann Arbor, MI; November 2019
- “Illuminating the Early Universe with Dark Matter Minihalos,” University of Waterloo Astrophysics Seminar; Waterloo, ON; November 2019
- “Probing the Early Universe with Dark Matter,” LSST Dark Matter Workshop at KICP; Chicago, IL; August 2019.
- “The Early Universe’s Imprint on Dark Matter,” 234th AAS Meeting Special Session on Dark Matter; St. Louis, MO; June 2019.
- “Illuminating the Early Universe with Dark Matter Minihalos,” LBL Particle Theory Seminar; Berkeley, CA; May 2019
- “Using Microhalos to Probe the Universe’s First Second,” Concordances and challenges in cosmology after Planck; Sexten Center for Astrophysics; Sesto, Bolzano, Italy; February 2019.
- “Illuminating the Early Universe with Dark Matter Minihalos,” New York University Physics Colloquium; New York, NY; February 2019
- “Illuminating the Early Universe with Dark Matter Minihalos,” University of Illinois Urbana-Champaign Astrophysics Seminar; Urbana-Champaign, IL; November 2018.
- “Illuminating the Early Universe with Dark Matter Minihalos,” Institute for Theory and Computation Colloquium; Harvard-Smithsonian Center for Astrophysics; Cambridge, MA; October 2018.
- “Using Microhalos to Prove the Universe’s First Second,” 13th Conference on the Intersections of Particle and Nuclear Physics (CIPANP); Palm Springs, CA; May 2018.
- “The Early Universe’s Imprint on Dark Matter,” Mitchell Conference on Collider, Dark Matter, and Neutrino Physics; College Station, TX; May 2018.
- “The Early Universe’s Imprint on Dark Matter,” Towards Dark Matter Discovery KICP Workshop; Chicago, IL; April 2018.
- “The Early Universe’s Imprint on Dark Matter,” The Particle Frontier Aspen Center for Physics Winter Conference; Aspen, CO; March 2018
- “Using Microhalos to Probe the Universe’s First Second,” Dark Universe Science Center Seminar; University of Washington; Seattle, WA; January 2018.
- “The Universe’s First Second,” Haverford College Distinguished Visitor Colloquium; Haverford, PA; November 2017.
- “The Universe’s First Second,” Aspen Center for Physics Colloquium; Aspen, CO; June 2017.
- “The Early Universe’s Imprint on Dark Matter,” CETUP* Dark Matter Physics Workshop; Lead, SD; July 2016.
- “An Early-Universe Boost to the Dark Matter Annihilation Rate,” Carnegie Mellon University Astrophysics Seminar; Pittsburgh, PA; September 2015

- “An Early-Universe Boost to the Dark Matter Annihilation Rate,” Johns Hopkins University Cosmology and High Energy Theory Seminar; Baltimore, MA; October 2015
- “An Early-Universe Boost to the Dark Matter Annihilation Rate,” Ohio State University CCAPP Seminar; Columbus, OH; October 2015
- “Using gamma-rays to probe the Universe's first second,” East Carolina Physics Colloquium; Greenville, NC; September 2015
- “The Dark Matter Annihilation Boost from Low-Temperature Reheating,” Mitchell Workshop on Collider and Dark Matter Physics; Texas A&M; College Station, TX, May 2015
- “Using Microhalos to Probe the Origins of Dark Matter,” Institute for Advanced Study Informal Astrophysics Seminar; Princeton, NJ; November 2014
- “Kicking Chameleons: early universe challenges for chameleon gravity,” UNC Wilmington Physics Colloquium; Wilmington, NC; October 2014
- “The Dark Sector’s First Second,” Syracuse University HET/Cosmology/Relativity Seminar; Syracuse, NY; October 2014
- “The Dark Sector’s First Second,” Wake Forest Physics Colloquium; Winston-Salem, NC; September 2014
- “Gravity effects in the early universe,” Novel Probes of Gravity and Dark Energy Workshop; University of Pennsylvania; Philadelphia, PA; April 2013
- “Using Dark Matter to Probe the Early Universe,” Dark Matter: From Colliders to the Cosmos Workshop; Texas A&M; College Station, TX; March 2013
- “The Dark Sector’s First Minute,”
Institute for Advanced Study Informal Astrophysics Seminar; Princeton, NJ; February 2013
University of California Riverside Physics Colloquium; Riverside, CA; March 2013
University of North Carolina Chapel Hill Physics Colloquium; Chapel Hill, NC; March 2013
- “Kicking Chameleons: early universe challenges for chameleon gravity,”
Case Western Reserve University Astroparticle Seminar; Cleveland, OH; October 2012.
Perimeter Institute Cosmology Seminar; Waterloo, ON; October 2012.
- “Microhalos: Messengers from the Early Universe,”
University of Illinois Astrophysics Colloquium; Urbana-Champaign, IL; March 2012.
Rochester Institute of Technology Astronomy Colloquium; Rochester, NY; March 2012.
- “Dark matter microhalos: messengers from the early universe,” KICP Friday noon seminar; University of Chicago; Chicago, IL; October 2011.
- “What dark matter microhalos can tell us about reheating,” Unravelling Dark Matter Conference; Perimeter Institute; Waterloo, ON; September 2011.
- “Astrometric microlensing by local subhalos: a new window on reheating?” Dark Matter from Every Direction Workshop; McGill University; Montreal, QC; April 2011.
- “Shining light through the darkness: detecting local dark matter with stellar astrometry,” University of Waterloo Astronomy Seminar, Waterloo, ON; September 2010.
- “Origins of the CMB hemispherical power asymmetry,” Low- l , Large-Angle Anomaly Workshop; Case Western Reserve University; Cleveland, OH; February 2010.

- “Looking Beyond the Cosmological Horizon,” prize Everhart Lecture at Caltech; Pasadena, CA; March 2009.
- “Inflationary Origins of the Cosmic Power Asymmetry,” Perimeter Institute Young Researchers Conference, Waterloo, ON; December 2008.
- “Structure Beyond the Horizon: Inflationary Origins of the Cosmic Power Asymmetry,” Fermilab theoretical astrophysics seminar, Batavia, IL; December 2008.
KIPAC cosmology seminar, Stanford, CA; November 2008.
Institute for Advanced Study informal seminar, Princeton, NJ; November 2008.
UC Berkeley TAC Seminar, Berkeley, CA; October 2008.
CITA Seminar, Toronto, ON; October 2008.
Perimeter Institute Cosmology Seminar, Waterloo, ON; October 2008