Chanda Prescod-Weinstein

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Current position

Research Associate, Department of Physics, University of Washington, Seattle, U.S.A.
advisor: Ann Nelson

Areas of specialization

Theoretical Cosmology with an emphasis on classical and quantum fields in the early universe; novel approaches to dark matter (axions) and cosmic acceleration; observational and theoretical consequences of particle phenomena in neutron stars; and formal problems in quantum fields in curved spacetimes

Education

2011 PhD in Physics, University of Waterloo/Perimeter Institute, Canada, Dissertation: *Cosmic Acceleration as Quantum Gravity Phenomenology*, advisors: Dr. Lee Smolin & Professor Niayesh Afshordi

2005 MSc in Astronomy and Astrophysics, University of California, Santa Cruz, U.S.A., advisor: Professor Anthony Aguirre

2003 AB in Physics and Astronomy and Astrophysics, Harvard College, Cambridge, U.S.A., Thesis: *A Study of Winds in Active Galactic Nuclei*, advisor: Dr. Martin Elvis

Appointments held

2011-2016 Dr. Martin Luther King, Jr. Fellow in Physics, Massachusetts Institute of Technology, Cambridge, U.S.A.

2010-2011 NASA Postdoctoral Program Fellow, Observational Cosmology Lab, Goddard Space Flight Center, Greenbelt, U.S.A.

2006-2010 Graduate Student Researcher, Perimeter Institute for Theoretical Physics, Waterloo, Canada

2003-2006 Doctoral Student, University of California, Santa Cruz, U.S.A.

2003 Summer Researcher, Smithsonian Astrophysical Observatory, Cambridge, U.S.A.

2002 REU, Department of Materials & Applied Science, Harvard University, Cambridge, U.S.A.

2001 REU, Department of Computational Neuroscience, University of Chicago, U.S.A.
2000-2002 Supernova Data Analysis, Harvard College Observatory, Cambridge, U.S.A.
2000 REU, Department of Physics, University of Chicago, U.S.A.

Grants, honors & awards

2017- FQXi Member
2016-2018 Principle Investigator, FQXi Physics of the Observer Large Grant, $100,522.31, "Epistemological Schemata of Astro | Physics: A Reconstruction of Observers"
2013 Infinite Kilometer Award, M.I.T. School of Science
2012 Young Scientist, Lindau Nobel Laureates Conference in Physics
2012 Society for the Advancement of Chicanos/Hispanics and Native Americans in the Sciences Summer Leadership Institute Graduate
2011-2016 Dr. Martin Luther King Postdoctoral Fellowship, M.I.T.
2007 Barbados House Canada Inc. Gordon C. Bynoe Scholarship Award
2004-2007 National Science Foundation Graduate Research Fellow
2001 Harvard Foundation for Intercultural and Race Relations Award

Publications

*Authorship is alphabetical except where * appears.*

Refereed articles

2015 A. Guth, M.P. Hertzberg, & **C. Prescod-Weinstein**, *Do Dark Matter Axions Form a Condensate with Long-Range Correlation?*, **Editors' Suggestion** in *Phys. Rev. D* 92, 103513, arXiv:1412.5930 [astro-ph.CO]
2015 **C. Prescod-Weinstein** and E. Bertschinger,* *An Extension of the Faddeev-Jackiw Technique to Fields in Curved Spacetimes*, *Class. Quantum Grav.* 32 075011, [arXiv:1404.0382 [hep-th]]
2009 **C. Prescod-Weinstein** and L. Smolin, *Disordered Locality as an Explanation for the Dark Energy*, *Phys. Rev. D* 80, 063505 [arXiv:0905.3551v2 [astro-ph.CO]]
2009 **C. Prescod-Weinstein**, N. Afshordi and M. Balogh,* *Stellar Black Holes and the Origin of Cosmic Acceleration*, *Phys. Rev. D* 80, 043513, [arXiv:0903.5303v3 [hep-th]]

Under Review

2017 A. Nelson and **C. Prescod-Weinstein**, *The Relaxion: A Landscape Without Anthropics*, arXiv:1708.00010 [hep-ph], Submitted to Physical Review D, Aug. 2017
2016 M. DeCross, D. Kaiser, A. Prabhu, **C. Prescod-Weinstein**, and E. Sfakianakis, *Preheating after Multifield Inflation with Nonminimal Couplings, III: Dynamical spacetime results*, arXiv:1610.08916 [astro-ph.CO], Submitted to Physical Review D, Nov. 2016
2016 M. DeCross, D. Kaiser, A. Prabhu, **C. Prescod-Weinstein**, and E. Sfakianakis, *Preheating after Multifield Inflation with Nonminimal Couplings, II: Resonance Structure*, arXiv:1610.08868 [astro-ph.CO], Submitted to Physical Review D, Nov. 2016
2015 M. DeCross, D. Kaiser, A. Prabhu, **C. Prescod-Weinstein**, and E. Sfakianakis, *Preheating af-*

ter Multifield Inflation with Nonminimal Couplings, I: Covariant Formalism and Attractor Behavior, arXiv:1510.085531 [astro-ph.CO], Submitted to Physical Review D, Nov. 2016

Preprints

2016 C. Brinkworth, A.B. Skaer, **C. Prescod-Weinstein**, J. Teske, & S. Tuttle,* *Building an Inclusive AAS - The Critical Role of Diversity and Inclusion Training for AAS Council and Astronomy Leadership*, arXiv:1610.02916 [astro-ph.IM]

2010 **C. Prescod-Weinstein** and N. Afshordi,* *Using Dark Matter Haloes to Learn about Cosmic Acceleration: A New Proposal for a Universal Mass Function*, arXiv:1010.5501 [astro-ph.CO]

2008 S. DeDeo and **C. Prescod-Weinstein**, *Macroscopic Objects in Theories with Energy-dependent Speeds of Light*, arXiv:0811.1999 [astro-ph]

In Preparation

2017 R. Hložek, D. Kaiser, W. Koster, and **C. Prescod-Weinstein**, *Imprints of New Higgs Inflation on the Cosmic Microwave Background*

2017 **C. Prescod-Weinstein** and S. Tuttle,* *The problem of defining science* (FQXi-funded)

Invited presentations (selected)

2017 invited presentation on axions, From the LHC to Dark Matter and Beyond, Aspen Center for Physics, USA (March 2017)

2016 *Axions and Inflatons in the Early Universe*, *Whiting Prize Lecture*, Wellesley College, Massachusetts, USA (October 2016)

2016 *From Condensed Matter to Cosmology: Axions and Inflatons in the Early Universe*, Colloquium, Department of Astronomy, Yale University, USA (February 2016)

2015 *From Condensed Matter to Cosmology: Axions in the Early Universe*, Astrophysics Colloquium, American Museum of Natural History, New York, USA (April 2015)

2015 *From Condensed Matter to Cosmology: Axions & Inflatons in the Early Universe*, Colloquium, Department of Physics, University of Washington, USA (March 2015)

2015 *Does Axion Dark Matter form Bose-Einstein Condensates?*, Colloquium, Department of Astronomy, Pennsylvania State University, Pennsylvania, USA (January 2015)

2014 *Bose-Einstein Condensates In Space!*, Department of Physics and Astronomy, Swarthmore College, Pennsylvania, USA (November 2014)

2013 *Axion Dynamics in Curved Spacetimes*, Astrophysics Seminar, Brown University, Providence, USA (March 2013)

2012 *Cosmology as Quantum Gravity*, Department of Physics Colloquium, Wellesley College, Wellesley, USA (October 2012)

2010 *Can Dark Matter Tell Us About Dark Energy?*, Colloquium, Department of Mathematics, California State University, Northridge, U.S.A. (October, 2010)

2009 *Better Cosmology Through Modified Gravity*, Tea Talk, Department of Astronomy, California Institute of Technology, Pasadena, California (December, 2009)

Teaching

2014-16 Co-supervisor for undergraduates in Guth Group: Matthew DeCross, Karla Guardado (senior thesis), & Anirudh Prabhu
2012 Associate Instructor, Freshman Seminar on Cosmology
2012 Recitation Instructor, 8.962: Graduate General Relativity, M.I.T.
2011 Research Mentor, *What's the Deal with Cosmic Acceleration?*, International Summer School for Young Physicists, Perimeter Institute for Theoretical Physics, Waterloo, Canada
2010 Research Mentor, *What's the Deal with Cosmic Acceleration?*, International Summer School for Young Physicists, Perimeter Institute for Theoretical Physics, Waterloo, Canada
2009 Research Mentor, *Do Black Holes Exist?*, International Summer School for Young Physicists, Perimeter Institute for Theoretical Physics, Waterloo, Canada
2009 Teaching Assistant, Elementary Particle Physics for Undergraduates, University of Waterloo, Canada
2008 Teaching Assistant, Physics 701, Graduate Quantum Mechanics I
2008 Teaching Assistant, Physics 441b, Advanced Electromagnetism II
2008 Research Mentor, *Do Black Holes Exist?*, International Summer School for Young Physicists, Perimeter Institute for Theoretical Physics, Waterloo, Canada
2007 Teaching Assistant, Physics 441a, Advanced Electromagnetism I
2005 Teaching Assistant, Earth Sciences 1: Planetary Science
2003-2004 Teaching Assistant, Astronomy 2: Astronomy for Non-scientists
2002-2003 Tutor, Harvard Physics Question Center

Collaborations & service to the profession

Collaborations

2016- STROBE-X, X-ray spectroscopy mission, concept study funded by NASA
2016- XIPE, the X-ray Polar Imaging Explorer, concept study funded by ESA
2016- eXTP, enhanced X-ray Timing and Polarimetry mission, concept study funded by CAS

Service

2016- *Executive Committee Member*, LGBT+ Physicists
2016 *Co-author*, *Building an Inclusive AAS - The Critical Role of Diversity and Inclusion Training for AAS Council and Astronomy Leadership*, arXiv:1610.02916 [astro-ph.IM]
2011-2017 *Founding Executive Member*, American Astronomical Society Committee on Sexual Orientation and Gender Minorities in Astronomy (SGMA)
2011 *Co-Chair*, Joint Meeting of National Society of Black Physicists & National Society of Hispanic Physicists
2009 *Graduate Representative*, Guelph-Waterloo Physics Institute Coordinating Committee
2008-2011 *Executive Committee*, National Society of Hispanic Physicists
2007- *Chair*, Cosmology, Classical & Quantum Gravity Committee, National Society of Black Physicists
2005-2011 *Member*, Conference Committee & Executive Committee, National Society of Black Physicists