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CURRICULUM VITAE

EDUCATION

2010 – 2013	Ph.D. in Physics from the University of California, San Diego Thesis: *Constraining Dark Matter and Dark Energy Models using Astrophysical Surveys* Advisor: Prof. Kim Griest
2008 – 2010	M.S. in Physics from the University of California, San Diego
2004 – 2008	B.S., *cum laude* in Physics with a Specialization in Astrophysics (*Major*) and Chemistry (*Minor*) from the University of California, San Diego

RESEARCH INTERESTS

Cosmology, Microlensing, Lyman-Alpha Forest, Primordial Black Holes, Self-Lensing Binaries, Large Scale Structure, Baryon Acoustic Oscillations, Time-Domain Astronomy

APPOINTMENTS

2018 – present	Assistant Research Scientist	NASA Goddard / CRESST-II (UMBC), MD
2016 – present	Research Guest Appointment	Brookhaven National Laboratory, NY
2013 – 2016	Research Associate	Brookhaven National Laboratory, NY
2012 - 2019	Research Affiliate	Dept of Astronomy, University of Maryland, MD
2009 – 2013	Graduate Student Researcher	Dept. of Physics, UC San Diego, CA
2008 – 2009	Teaching Assistant	Dept. of Physics, UC San Diego, CA
2007	Undergraduate Research Assistant	Princeton University, NJ
2007	Undergraduate Research Assistant	Dept of Physics, UC San Diego, CA
2005 – 2007	Undergraduate Research Assistant	Scripps Institute of Oceanography, CA

AWARDS & SCHOLARSHIPS

2009-2013	NSF Graduate Research Fellowship	National Science Foundation
2008	Malmberg Award	Dept. of Physics, UC San Diego, CA
2008	Nominated to Phi Beta Kappa	UC San Diego, CA
2004-2008	Provost Honors	UC San Diego, CA
2006-2008	Marshall College Honors	UC San Diego, CA

REFEREED PUBLICATIONS

1. **A. M. Cieplak** and A. Slosar, Characterizing the Lyα forest flux probability distribution function using Legendre polynomials, JCAP 10, 013 (2017). http://https://arxiv.org/abs/1608.08808.

2. C.-T. Chiang, **A. M. Cieplak**, F. Schmidt, and A. Slosar, Response approach to the squeezed-limit bispectrum: application to the correlation of quasar and Lyα forest power spectrum, JCAP 06 022 (2017). https://arxiv.org/abs/1701.03375.
3. **A. M. Cieplak** and A. Slosar, Towards physics responsible for large-scale structure Lyman-α forest bias parameters, JCAP 03 016 (2016) http://arxiv.org/abs/1509.07875.
4. K. Griest, **A. M. Cieplak** and M. J. Lehner, Experimental Limits on Primordial Black Hold Dark Matter from the First Two Years of Kepler Data, Ap.J. 786 (2), 158 (2014) http://arxiv.org/abs/1307.5798.
5. K. Griest, **A. M. Cieplak**, and M. J. Lehner, New Limits on Primordial Black Hole Dark Matter from an Analysis of Kepler Source Microlensing Data, Phys. Rev. Lett. 111 181302 (2013). ***Editors Highlight*** http://link.aps.org/doi/10.1103/PhysRevLett.111.181302
6. **A. M. Cieplak** and K. Griest, Improved Theoretical Predictions of Microlensing Rates for the Detection of Primordial Black Hole Dark Matter, Ap.J. 767 (2), 145 (2013). http://arxiv.org/abs/1210.7729
7. K. Griest, M. J. Lehner, **A. M. Cieplak**, and Bhuvnesh Jain, Microlensing of Kepler Stars as a Method of Detecting Primordial Black Hole Dark Matter, Phys. Rev. Lett. 107, 231101 (2011). ***Editors Highlight*** http://arxiv.org/abs/1109.4975.
8. Wozniak, S. B., D. Stramski, M. Stramska, R. A. Reynolds, V. M. Wright, E. Y. Miksic, M. Cichocka, and **A. M. Cieplak** (2010), Optical variability of seawater in relation to particle concentration, composition, and size distribution in the nearshore marine environment at Imperial Beach, California, J. Geophys. Res., 115, C08027,doi:10.1029/2009JC005554.
9. Stramska, M., D. Stramski, M. Cichocka, **A. Cieplak**, and S. B. Wozniak (2008), Effects of atmospheric particles from Southern California on the optical properties of seawater, J. Geophys. Res., 113, C08037, doi:10.1029/2007JC004407.

NON-REFEREED PUBLICATIONS

1. White Paper: Ali-Haimoud, Y., et al., Electromagnetic probes of primordial black holes as dark matter, (2019) https://arxiv.org/abs/1903.04424.

INVITED TALKS

"The Search for Black Holes and Neutron Stars with Main Sequence Stellar Companions using TESS"
Invited SED Director's Seminar. NASA Goddard, April 2019.

"Microlensing with Kepler and Future Prospects"
Invited Group Talk. NASA Goddard, May 2018.

"Constraining Cosmology using Astrophysical Surveys: Probing Primordial Black Hole Dark Matter using Microlensing"
Invited Seminar. Lawrence Livermore National Laboratory, January 2017.

"Theoretical Predictions of Large Scale Clustering in the Lyman-alpha Forest"
Wine and Cheese Talk. Department of Physics and Astronomy, Johns Hopkins University, May 2015.

"New Limits on Primordial Black Hole Dark Matter using the First Two Years of Kepler Data"
Invited Conference Talk. Workshop on Primordial Black Holes: Theories and Observations. Nagoya University, Japan, November 2013.

"Preliminary Primordial Black Hole Dark Matter Constraints using Microlensing of Kepler Source Stars"
Invited Conference Talk. INPAC General Meeting. Asilomar, CA, April 2013.

"Constraining Primordial Black Hole Dark Matter using Microlensing"
Invited Conference Talk. Cosmic Frontier Meeting. SLAC, CA, March 2013.

"Constraining Primordial Black Hole Dark Matter using Microlensing"
Invited Seminar. Physics Department, Brookhaven National Laboratory, NY, January 2013.

"Constraining Primordial Black Hole Dark Matter using Microlensing"
Invited Seminar. Center for Cosmology and AstroParticle Physics, The Ohio State University, OH, December, 2012.

ORAL & POSTER PRESENTATIONS

"Self-Lensing Binary Lightcurve Modeling and False Positive Rejections"
Conference Talk. TESS Data Workshop, Baltimore, MD, February 2019.

"Understanding the physics driving the values of Lyman-alpha forest bias parameters"
Conference Talk. AAS Meeting #227, Kissimmee, Fl, January 2016. #109.01

"Theoretical Predictions of Large Scale Clustering in the Lyman-alpha Forest"
Conference Talk. Unbiased Cosmology from Biased Tracers, Institute for Advanced Study, Princeton, NJ September 2015.

"Theoretical Predictions of Large Scale Clustering in the Lyman-alpha Forest"
Conference Talk. COSMO-15, University of Warsaw, Warsaw, Poland, September 2015.

"Theoretical Predictions of Large Scale Clustering in the Lyman-alpha Forest"
Conference Talk. Cosmology on the Slopes, Aspen, CO, March 2015.

"Theoretical Predictions of Large Scale Clustering in the Lyman-alpha Forest"
Conference Talk. AAS Meeting #225, Seattle, WA, January 2015. #405.01.

"New Microlensing Constraints of Primordial Black Hole Dark Matter based on First Two Years of Kepler Data"
Conference Talk. AAS Meeting #223, Washington, DC, January 2014. #427.02D.

"New Microlensing Constraints of Primordial Black Hole Dark Matter using the First Two Years of Kepler Lightcurve Data'
Theory Lunch Talk. Department of Astronomy, University of Maryland, November, 2013.

"Recent Studies of Primordial Black Hole Dark Matter'
Journal Club Talk. Center for Astrophysics and Space Science, UC San Diego, CA, February, 2013.

"Improved Predictions of Kepler Microlensing Rates for Primordial Black Hole Dark Matter"
Conference Talk. AAS Meeting #221, Long Beach, CA, January 2013. #125.07.

"The Cosmic Coincidence Problem and Neutrinos"
Journal Club Talk. Center for Astrophysics and Space Science, UC San Diego, CA, January, 2012.

"A New Method of Detecting Primordial Black Hole Dark Matter using Microlensing"
Poster. AAS Meeting #219, Austin, TX, January 2012. #440.13.

"Microlensing: A Possible Method of Detecting Primordial Black Hole Dark Matter"
Conference Talk. 11th Theoretical Astrophysics in Southern California meeting, Kavli Institute for Theoretical Physics, UC Santa Barbara, CA, October, 2011.

CURRENT AND PAST RESEARCH PROJECT DESCRIPTIONS

Self-Lensing Binary Search

Location: NASA Goddard Collaborators: Jeremy Schnittman, John Baker, Richard Barry
Description: Using TESS lightcurve data to search for self-lensing binaries.

Gravitational Microlensing for the Detection of Intermediate Mass Primordial Black Holes

Location: NASA Goddard Collaborators: Will Dawson, Michael Schneider, George Chapline, Mark Ammons Tim Axelrod, Alex Drlica-Wagner, Nathan Golovich, Jessica Lu, Anja von der Linden, Tom Zick
Description: Using wide-field astronomical imaging surveys to search for intermediate mass Primordial Black Hole Dark Matter with Microlensing

Gravitational Microlensing for the Detection of Low Mass Primordial Black Holes

Location: NASA Goddard
Description: Using Kepler data to search for low mass Primordial Black Hole Dark Matter with Microlensing, as well

as making predictions for future surveys, such as WFIRST.

Improving Error Analysis of Lyman-alpha Forest Probability Distribution Function Measurements

Location: BNL Collaborators: Anze Slosar
Description: Proposing the use of Legendre polynomial decomposition as a way to marginalize over mean flux and providing a well measured finite number of coefficients with very sharp transition to noise dominance. 2015-2017

Non-Gaussianity Constraints using Large Scale Structure Measurements of the Lyman-alpha Forest

Location: BNL Collaborators: Chi-Ting Chiang, Anze Slosar, Fabian Schmidt
Description: Fisher forecasts for the ability of future experiments to constrain local non-Gaussianity using cross-correlations between large-scale quasar field and small-scale Lyman-α forest field. 2016-2017

Theoretical Understanding of Density Bias and Velocity Bias in Lyman-Alpha Forest Power Spectrum Measurements

Location: BNL Collaborators: Anze Slosar, Nishikanta Khandai
Description: Using GADGET-3 hydrodynamic cosmological simulations to study the underlying density bias and redshift space distortions in measurements of Lyman-alpha forest quasar absorption spectra. 2013-1016

Gravitational Microlensing for the Detection of Primordial Black Holes

Location: UCSD/BNL Mentor/Collaborators: Prof. Kim Griest, Matthew J. Lehner
Description: Putting limits on Primordial Black Hole Dark Matter using microlensing of Kepler source stars. 2010-2013

Hydrodynamic Cosmological Simulations for Baryon Acoustic Oscillation Measurements in the Lyman-Alpha Forest.

Location: UCSD/BNL Mentors/Collaborators: Prof. Kim Griest, Prof. Michael Norman
Description: Using ENZO hydrodynamic cosmological simulations to study possible systematic effects of measuring Baryon Acoustic Oscillations in the Lyman-alpha forest in quasar absorption spectra. 2008-2011.

Measurements of the Diffuse Galactic Light using the Sloan Digital Sky Survey data

Location: Princeton University Mentor: Prof. Bruce Draine
Description: Improving measurements of the Diffuse Galactic Light already in place using sky brightness data from the Sloan Digital Sky Survey DR6 data. June - August 2007.

Lunar Laser Ranging Research

Location: UCSD Mentor: Prof. Tom Murphy
Description: Characterizing dark rates and crosstalk excitations of Avalanche Photodiodes used to detect photons traveling from the Earth to the Moon and back. March-June 2007.

Impact of Coastline Atmospheric Particles on Optical Properties of Seawater.

Location: Scripps Institute of Oceanography Mentor: Prof. Dariusz Stramski
Description: Working on the NASA-sponsored project entitled "Multi-sensor satellite observations of the effects of human activities, weather, and climate on water quality in the Southern California coastal zone", performing scattering and absorption measurements, using a Perkin-Elmer spectrophotometer as well as a Laser In-Situ Scattering and Transmissometry instrument (LISST), and a multi-angle light scattering (MALS) instrument: DAWN. June 2005 - June 2007.

GRANTS AND PROPOSALS

1. NASA-TESS Guest Investigator Program Cycle 1 (co-I) *Awarded*
   Darkness in our midst: Self-lensing search for black holes and neutron stars in the local stellar neighborhood.
   Period: 01/01/2019 - 12/31/2019
2. NASA-TESS Guest Investigator Program Cycle 2 (co-I) *Pending*

Binary Stars as Astrophysical Laboratories

3. NASA - ADAP (co-I) *Pending*
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OBSERVING PROPOSALS

1. DECam, Co-I, PALS: Paralensing Survey of Intermediate Mass Black Holes, 2018, *Awarded*

SCHOLARLY & PROFESSIONAL SERVICE

- Education Policy Committee Member, UCSD Physics Dept (Sept 2012 - June 2013)
- Physics Graduate Council Class Representative, UCSD (Sept 2012 - June 2013)
- Volunteer, AAS Meeting # 219, Austin, TX (January 2012)
- President and Vice-President, UCSD Astrophysics Club (Sept 2006 - June 2008)

TEACHING EXPERIENCE

- CAE (Center for Astronomy Education) Tier I Teaching Excellence Workshop for Current and Future Astronomy and Space Science Instructors (Jan 2014)
- Graduate Qualification Exam Review - organizer and teacher of graduate level Mathematical Methods, Classical Mechanics, and Electromagnetism reviews (summers 2010-2012)
- Teaching Assistant, UCSD, PHYS 1A: Mechanics (Jan - June 2009)
- Teaching Assistant, UCSD PHYS 1AL: Mechanics Laboratory (Sept - Dec 2008)

MEMBERSHIP

Full Member of the American Astronomical Society
Member of American Physical Society
Associate Member of LSST Dark Energy Science Collaboration (DESC)

OUTREACH ACTIVITIES

Expanding Your Horizons Conference

Location: University of San Diego
Description: Developed and taught interactive laboratory course titled "Astronomy and Optics" to high school girls interested in STEM careers at the University of San Diego, San Diego, CA. March, 2011.

Women in Physics Coordinator

Location: UC San Diego
Description: Co-organizer of Women in Physics meetings and seminars. Sept 2011-June 2013.

Tech Trek Math/Science Camp for Girls

Location: UC San Diego
Description: Leading hands-on physics demos with small groups, explaining the physics of optics, aimed at middle school girls who show an interest in science to retain their interest into the future. Summer 2009, 2011.

Mentoring of Undergraduate Women

Location: UC San Diego
Description: Advice on coursework, internships, and preparation for graduate school.
Sept 2008-2015.

Mentoring of High School Students

Location: Long Island, NY
Description: Advice on applications for undergraduate colleges, majors, coursework, and internships.
2015-2016.

CONFERENCE & WORKSHOP PARTICIPATION

2019 February	TESS Data Workshop, STSci, Baltimore, MD
2017 March	DOE Cosmic Visions: New Ideas in Dark Matter, UMD, College Park, MD
2016 May	Cross-Correlation Spectacular, BNL, Brookhaven, NY
2016 Jan	American Astronomical Society 227th Meeting, Kissimmee, FL
2015 Sept	Unbiased Cosmology from Biased Tracers, IAS, Princeton, NJ
2015 Sept	COSMO2015, Warsaw, Poland
2015 Mar	Cosmology on the Slopes, Aspen, CO
2015 Jan	American Astronomical Society 225th Meeting, Seattle, WA
2014 Aug	COSMO2014, Chicago, IL
2014 Jan	American Astronomical Society 223rd Meeting, Washington, DC
2013 Nov	Workshop on Primordial Black Holes: Theories and Observations, Nagoya University, Japan
2013 Nov	Workshop on Precision Astronomy with Fully Depleted CCDs, BNL, NY
2013 Apr	INPAC General Meeting, Asilomar, CA
2013 Mar	Cosmic Frontier Meeting, SLAC, CA
2013 Jan	American Astronomical Society 221st Meeting, Long Beach, CA
2012 Oct	Dark Matter Universe: On the Threshold of Discovery, Irvine, CA
2012 Jan	American Astronomical Society 219th Meeting, Austin, TX
2011 Oct	11th Theoretical Astrophysics Conference in Southern California Meeting, Santa Barbara, CA
2011 Sept	BigBOSS Community Workshop, Tucson, AZ
2011 July	Prospects in Theoretical Physics: Frontiers of Physics in Cosmology, IAS, Princeton, NJ
2010 Dec	Future of AstroComputing Conference, San Diego, CA
2010 Jun	ENZO User Workshop, San Diego, CA
2010 March	Southern California Center for Galaxy Evolution Inaugural Workshop, Irvine, CA
2009 Oct	9th Theoretical Astrophysics Conference in Southern California Meeting, Los Angeles, CA
2009 Oct	Observational Astronomy Workshop, Lick Observatory, CA