

EDUCATIONAL BACKGROUND

Imperial College, University of London, U.K., PhD in Physics, 1999-2002.

Imperial College, University of London, U.K., MSc in Quantum Fields & Fundamental Forces, 1998-1999.

Christ's College, Cambridge University, U.K., BA Hons. in Natural Sciences, 1992-1995.

POSITIONS HELD

Cornell University, College of Arts & Sciences

- Senior Associate Dean for Math and Science, 2021-
- Professor, Department of Astronomy, 2017-
- Senior Associate Dean for Undergraduate Education, 2017-2021.
- Associate Professor, Department of Astronomy, 2011-2016.
- Assistant Professor, Department of Astronomy, 2005-2010.

Princeton University, Dept. of Astrophysical Sciences, Postdoctoral Fellow, 2002-2005.

Bridgewater Consulting, London, Associate Consultant, 1997-1998.

Accenture, Strategy Division, London, Senior Analyst, 1995-1997.

HONORS AND AWARDS

Breakthrough Prize in Fundamental Physics (WMAP), 2018.

Elected Fellow of the American Physical Society, 2016.

Merle Kingsley Distinguished Fellow, Caltech, 2013.

Gruber Prize in Cosmology (WMAP), Gruber Foundation, 2012.

Presidential Early Career Award in Science and Engineering (PECASE), White House Office of Science and Technology Policy, 2010.

CAREER Award, National Science Foundation, 2009. Cottrell Scholar Award, Research Corporation, 2008. NASA Group Achievement Award (WMAP), 2007.

CURRENT RESEARCH FUNDING AND SUPPORT

PI, NASA Astrophysics Theory Program, "Elucidating the nature of the dark sector and gravity with novel tracers", (Co-I Nick Battaglia) 2018-2022, \$717,566.

Co-I, NASA WFIRST Science Investigation Team member, "Cosmology with the High Latitude Survey", (PI Olivier Dore, JPL), 2016-present, \$201,090 to date

PI, DOE (Office of Science) Cosmic Frontiers Program, "Maximizing LSST and DESI's Impact on Dark Sector and Inflationary Physics.", 2014- 2021, \$621,000.

Co-I, NASA Euclid Science Team, "Constraining Dark Energy and Modified Gravity with Euclid", (PI Jason Rhodes, JPL), 2012-present, \$365,733 to date.

PRIOR RESEARCH FUNDING AND SUPPORT

PI, NASA Astrophysics Theory Program, "*Discerning the Details of the Cosmic Dark Sector*", (Co-Is Eanna Flanagan, Cornell, Justin Khoury and Mark Trodden, U. Penn.), 2014-2018, \$961,302.

PI, DOE (Office of Science) Cosmic Frontiers Program, DESC Spokesperson support, 2015-2017, \$196,970.

Co-PI, U.K. Royal Academy of Science International Exchange Grant, "*Large scale structure insights into the origins of cosmic acceleration*", (Co-PI Sarah Bridle, Manchester University, U.K.), 2012-2015, £11,920.

PI, NASA Astrophysics Theory Program, "*Interactions In the Dark Sector Of Cosmology*", 2011-2014, (Co-Is Eanna Flanagan, Cornell, Justin Khoury and Mark Trodden, U. Penn), \$849,520.

PI, National Science Foundation CAREER award, Division of Astronomical Sciences, AST0844825, "*CAREER: Observational Signatures of Fundamental Physics in the Cosmos*", 2009-2015, \$627,814.

PI, Cottrell Scholar Award, Research Corporation, 2008-2013, \$100,000.

PI, NASA Astrophysics Theory Program, "*Confronting the details of cosmology's dark sector*", 2008-2011, (Co-Is Eanna Flanagan, Cornell, and Mark Trodden, U. Penn), \$601,223.

PI, National Science Foundation, Division of Astronomical Sciences, AST0607018, "*Dark Energy Dichotomies: Observational signatures of matter and gravity-based theories.*", 2006-2009, \$313,381.

Co-I, National Science Foundation, Division of Physics, PHY0555216, "*Astronomical consequences of fundamental physics*", 2006-2009, (PI Ira Wasserman, Co-I Eanna Flanagan, Cornell), \$120,000.

PI, Affinito-Stewart Award, President's Council of Cornell Women, 2006, \$9,485

PI, National Center for Supercomputing Applications (NCSA) TG-AST060029T, 2006-2007, 30,000 processor hours on the national Teragrid network.

SERVICE WITHIN THE SCIENCE COMMUNITY (last 10 years)

NASA Roman Space Telescope

- Science Interest Group member, 2020-present
- High Latitude Survey Science Investigation Team member, 2016-present

Simons Observatory Collaboration Council Oversight Committee, 2020-present

Large Synoptic Survey Telescope (LSST) Science Advisory Committee, 2017-present.

Large Synoptic Survey Telescope Dark Energy Science Collaboration (LSST DESC)

- Equity, Diversity and Inclusion Committee member, 2020-
- Awarded Collaboration Builder status, 2019.
- Advisory Board member 2017- 2019.
- Spokesperson (Collaboration Lead), 2015- 2017.
- Analysis Coordinator, 2014-2015.
- Theory/ Joint probes working group co-convener, 2012-2014.

NASA Euclid Science Team and U.S. Steering Committee member 2013-present.

Proposal review panelist for NASA, NSF and UK Science Technology Facilities Council (STFC).

U.S. Federal Astronomy and Astrophysics Advisory Committee (AAAC) member, 2016-2019.

NASA Physics of the Cosmos Program Analysis Group advisory committee member, 2014-2017.

Tri-Agency (DOE, NASA, NSF) coordination committee for LSST, Euclid & WFIRST, 2015-2017.

UC Santa Barbara Kavli Institute of Theoretical Physics (KITP) Advisory Board member, 2014-2017.

DESI (Dark Energy Spectroscopic Instrument) Collaboration member and "Small Scale Clustering, Clusters and Cross-Correlations" working group co-lead, 2014-2017.

Euclid Collaboration "Dark Energy/Testing Gravity" working group co-lead 2013-2015

American Physical Society, Division of Astrophysics Executive Committee,

- Nominations Committee Member, 2013.
- Member at Large, 2011-2013.

DOE Laboratory Review Committee for their Cosmic Frontiers Program October 2013.
Associate Editor for General Relativity and Gravitation, 2011-2013.

National Academy of Sciences Committee on Assessment of a Plan for U.S. Participation in Euclid, 2012.

NASA Wide-Field Infrared Survey Telescope (WFIRST) Science Definition Team, 2011-2012

STUDENTS MENTORED ON RESEARCH PROJECTS AT CORNELL

Current PhD students:

- Jonathan Davis, 2020-present.
- Yulin Gong, 2021-present.
- Lukas Wenzl, 2019-present.
- Christopher Wilson, 2019-present.

Graduated MSc and PhD students:

- Victoria Calafut, PhD 2020. Currently, a postdoctoral researcher at Canadian Institute for Theoretical Astrophysics (CITA), Toronto.
- Georgios Valogiannis. PhD 2020. Currently, a postdoctoral researcher at Harvard University.
- Joyce Byun, PhD 2015. Currently, a postdoctoral researcher at University of Arizona.
- Eva-Marie Mueller PhD 2015. Currently, a postdoctoral researcher at Oxford University, UK.
- Istvan Laszlo, PhD 2012. Currently, a lecturer at Monash University, Australia.
- Nishant Agarwal, PhD 2011. Currently, an Assistant Professor at Univ. Mass. Lowell.
- Matipon Tangmatitham, M.S. 2011. Went onto work at the National Astronomical Research Institute of Thailand. PhD 2019 from Michigan Tech.

Other PhD students:

- Maria Antonella Cid Munoz, Fulbright Student from CONICYT, Chile, 2008.
- Dylan Cromer, 2017- 2018. Went on to undertake PhD with another faculty member.
- David Bernat, 2005-2007. Went on to complete PhD in exoplanet science.

Undergraduate students:

- Samuel Evans, 2018-2019, went onto Boston University grad school.
- Trey Driskell, 2018, as a junior

Jonathan Davis (Utah Valley University), NSF REU student 2018, as a senior.

Keri Heuer, 2017, as a sophomore.

Avirukt Mittal, 2017, went onto Perimeter Institute and UC Berkeley grad school.

Byeonghee Yu, 2015-16, went onto UC Berkeley grad school.

Brenna Mockler, 2015, went onto UC Santa Cruz grad school.

Kira Hicks, 2013, went onto University of Washington grad school.

Victoria Calafut (College of New Jersey), NSF REU student 2013, went onto Cornell grad school.

Mykyta Hulko, 2012-13. went onto U. Toronto grad school.

Jae-Hwan Kang, 2011-12, went onto Stanford grad school.

Eva-Marie Mueller (Heidelberg Univ., Fulbright Scholar), 2010-11, went on to Cornell grad school.

Gavin Hartnett (Syracuse Univ.), NSF REU student 2008, went on to UC Santa Barbara grad school.

Nicholas Hollon (Villanova Univ.), NSF REU student 2007, went on to U. Chicago grad school.

Daniel Rasolt, 2006, went on to UC Santa Cruz grad school.

Derek Schaeffer, 2006-2007, went on to UCLA grad school.

Matipon Tangmatitham, 2006-2007, went on to Cornell grad school.

UNIVERSITY SERVICE (last 10 years)

University Academic Policies Committee, Chair, 2019-

University Core Assessment Committee, 2018-

University Cornell Experience Steering Group, 2018-

A&S Academic Records Committee, Chair, 2017-

A&S Educational Policy Committee, Chair, 2017-

CALS Data Science Curriculum Review Committee, 2019

A&S Curriculum Distribution Requirement Committee, Chair, 2018-2019

University Vice Provost for Enrollment Management Search Committee, 2018-2019

A&S Data Science Governance Committee, Chair 2018-2019

University First-Year Experience Executive Committee, 2018-2019

A&S Curriculum Committee, 2017-2018

Provost's Data Science Task Force, 2016-2018.

College of Arts and Sciences Diversity Council, Chair 2013-2015.

College of Arts and Sciences Dean Search Committee, 2012-13.

University Faculty Advisory Committee on Tenure Appointments (FACTA) committee, 2012-2015.

Departmental committees/ representation:

Department of Astronomy strategic planning committee, 2009-15, 2019-present.

Department of Astronomy undergraduate admissions representative, 2017-present.

Department of Astronomy Tenure Track committee member, 2018-19.

Department of Astronomy Tenure Track committee, 2018-19.

Department of Astronomy Associate Professor committee member, 2017.

Director of Graduate Studies for the Field of Astronomy, 2012-2017.

Department of Astronomy faculty hiring committee, 2016-17.

Department of Astronomy graduate admissions committee, 2005, 2012-2017.

Department of Astronomy Tenure Track committee member, 2016-17.

Department of Astronomy Tenure Track committee member, 2016-17.

Department of Astronomy course committee, 2007-2013.

UNIVERSITY TEACHING

Within the Cornell University College of Arts and Sciences:

AS 1102: "First-Year Advising Seminar" - First-year student first-semester advising seminar, piloted Fall 2017, Fall 2019.

ASTRO 4433: "Introduction to Cosmology" - Senior-level course I developed in 2010, and taught Spring 2011, 2013, 2015, 2017.

ASTRO/PHYS 6599: "Cosmology" - Graduate level course. Spring 2006, 2008, 2010, Fall 2015.

ASTRO 2211 "Stars, Galaxies & Cosmology" - Intro course for science & engineering students. Fall 2006-2009, 2011-2013.

ASTRO 4432: "Introduction to Astrophysics & Space Sciences II" - Senior-level course for astronomy & physics majors. Spring 2007, 2009.

For Cornell Adult University:

Online CyberTower Study Room, "The Puzzling Life of the Universe", July 2008.

Outside Cornell:

Invited graduate summer school lecturer at the International School of Physics "Enrico Fermi", Varenna, Italy, "New Horizons for Observational Cosmology", July 2013

Invited graduate summer school lecturer at the Theoretical Advanced Study Institute in Elementary Particle Physics (TASI) 2009, "Physics of the Large and the Small", Boulder, CO, June 2009.

Lecturer for the Cornell Center for Nanoscale Science Institute for Physics Teachers (CNS IPT) in Contemporary Physics, July 2006, March 2007, July 2007, July 2008, July 2009, 2011.

Science Teachers Association of New York State (STANYYS) seminar, Cornell, February 2009.

Invited graduate Easter school lecturer at "XVIII Physics Graduate Days in Heidelberg", Heidelberg University, Germany, April 2007.

CONFERENCE ORGANIZATION

Organizing committee, "Astronomy in the 2020s: Synergies with WFIRST", June 2017.

Organizer, "Dark Energy on non-linear scales", LSST Dark Energy Science Team Workshop, Argonne National Lab, Argonne, IL, February 2013.

Organizing committee, "Cosmology and Astroparticle Physics", Kavli Institute for Theoretical Physics China, Beijing, China, September 2012.

Organizing committee, "Science with a Wide-Field IR Telescope in Space", Pasadena, CA, February 2012

Organizer, Royal Society Discussion Meeting, "Cosmological Tests of General Relativity", London, UK, February 2011.

Organizer, Aspen Center for Physics Summer 3-week workshop, "Testing General Relativity in the Cosmos", Aspen, CO, June - July 2009.

Organizer, Aspen Center for Physics Winter Conference, "Understanding the Dark Sector: Dark Matter and Dark Energy", Aspen, CO, January 2009.

Organizer, National Academy of Sciences Japanese - American Kavli Frontiers of Science Symposium, December 2007.

Chair of the Dark Energy session, "New Views of the Universe", Chicago, IL, December 2005. Organizer of Astrophysics workgroup, "Weak Interaction and Neutrinos 2005(WIN'05)" conference, Delphi, Greece, June 2005.

Cosmology & structure formation session organizer, APS Meeting, Tampa, FL, April 2005. Organizer of the dark energy sessions, "COSMO '04" conference, Toronto, Canada, September 2004.

Dark energy session co-chair and review speaker, Santa Fe Workshop on Cosmology, NM, June 2003.

COLLOQUIA

Flatiron Institute, New York, NY, April 2021.

Penn State University, State College, PA, November 2019.

Canadian Institute for Theoretical Astrophysics (CITA), Toronto, CA, March 2017.

Rutgers University, NJ, April 2016.

Caltech, Pasadena, CA, April 2016.

Fermilab National Lab, Chicago, Illinois, March 2016.

Lawrence Berkeley National Lab/ UC Berkeley, CA, March 2016.

Yale University, Department of Physics colloquium, New Haven, CT, November 2015.

University of Pittsburgh, Department of Physics colloquium, Pittsburgh, PA, April 2015.

Princeton University, Department of Astrophysical Sciences colloquium, Princeton, NJ, March 2014.

Goddard Space Flight Center colloquium, Green Belt, MD, May 2013.

University of Maryland seminar, College Park, MD, May 2013.

Caltech, Department of Astronomy and Astrophysics, Pasadena, CA, January 2013.

Pennsylvania State University, Department of Physics colloquium, State College, PA, April 2012.

University of Manchester, Dept. of Physics & Astronomy colloquium, Manchester, UK, April 2012.

Arizona State University, School of Earth and Space Exploration seminar and colloquium, Phoenix, AZ, March 2012.

Carnegie Mellon University, Kavli Center for Cosmology seminar, February 2012.

University of Michigan, Dept. of Physics Colloquium, November 2011.

Case Western Reserve University, Particle/Astrophysics seminar, Cleveland, OH, March 2011.

New York University, Center for Cosmology and Particle Physics colloquium, May 2010.

NASA Jet Propulsion Laboratory, Astrophysics colloquium, Pasadena, CA, February 2010.

Harvard University Center for Astrophysics, Institute for Theory and Computation colloquium, Boston, MA, February 2010.

Perimeter Institute for Theoretical Physics, Waterloo, ON, Canada, January 2010.

University of Pennsylvania, Dept. of Physics & Astronomy colloquium, Philadelphia, PA, December 2009.

University of Florida, Dept. of Physics seminar, Gainesville, FL, December 2009. Cornell University, Dept. of Astronomy seminar, October 2009.

Saclay Journal Club, Commissariat a l'Energie Atomique (CEA), Paris, France, October 2009.

University of Arizona, Dept. of Astronomy colloquium, Tuscon, AZ, February 2009.

University of Michigan, Dept. of Physics colloquium, Ann Arbor, MI, September 2008.

Princeton University, Dept. of Physics seminar, Princeton, NJ, April 2008.

University of California Berkeley, Dept. of Physics seminar, Berkeley, CA, March 2008.

Cornell University, Dept. of Astronomy seminar, March 2008.

Cornell University, Dept. of Astronomy colloquium, March 2008.

University of Buffalo, Dept. of Physics seminar, Buffalo, NY, February 2008.

University of Pennsylvania, Dept. of Physics & Astronomy seminar, Philadelphia, PA, February 2008.

Harvard University, Center for Astrophysics, Joint Harvard-MIT-Tufts colloquium, Boston, MA, November 2007.

Wells College, Dept. of Physics seminar, Aurora, NY, October 2007.

McGill University, Dept. of Physics colloquium, Montreal, Canada, September 2007.
Canadian Institute for Theoretical Astrophysics, seminar, Toronto, Canada, May 2007.

University of Rome, La Sapienza, Dept. of Physics colloquium & more technical seminar, Italy, March 2007.

Space Telescope Science Institute, colloquium, Baltimore, MD, March 2007.

University of Wisconsin, Dept. of Physics colloquium & more technical seminar, Madison, WI, February 2007.

Hamilton College, Dept. of Physics colloquium, Clinton, NY, November 2006.

Cornell University, Dept. of Physics colloquium, March 2006.

Cornell University, Dept. of Astronomy seminar, March 2006.

CONFERENCE TALKS

“Enabling Cosmological Resonances Between WFIRST and LSST”, Caltech, Pasadena, CA, September 2016

“Cross-Correlation Spectacular with LSST”, Brookhaven National Lab, NY, May 2016
PHENO 2016, Pittsburgh, PA, May 2016.

American Astronomical Society meeting, Kissimmee FL, January 2016.

NASA PhysPAG meeting, Kissimmee FL, January 2016.

National Research Council Astronomy and Astrophysics Midterm Assessment Symposium, Irvine CA, December 2015.

“Testing Gravity”, Vancouver CA, January 2015.

American Astronomical Society meeting, Seattle WA, January 2015.

“WFIRST2014”, Pasadena, CA, October 2014.

“Dark Interactions”, NORDITA, Stockholm, Sweden, October 2014.

NASA HEAD meeting, Chicago, August 2014.

UK National Astronomy Meeting, Portsmouth, UK, August 2014.

“Implications of BICEP 2”, Perimeter Institute, Waterloo, CA, April 2014.

American Astronomical Society meeting, Washington D.C., January 2014.

“Tales of Lambda”, Nottingham University, UK, July 2013

American Physical Society meeting, Denver CO, April 2013.

“Cosmological Tests of Gravity”, Oxford University, UK, March 2013.

American Astronomical Society meeting, Long Beach, CA, January 2013.

Workshop on Cosmic Acceleration, Carnegie Mellon University, August 2012.

“17th Itzykson meeting on Dark Energy and Modified Gravity”, Institut de Physique Theorique (IPhT) of CEA-Saclay, France, June 2012

“Physics with a Positive Cosmological Constant”, Pennsylvania State University, Penn State, PA, May 2012.

“Science with a Wide-Field IR Telescope in Space”, Pasadena, CA, February 2012.

“Testing Gravity with Astrophysical and Cosmological Observations”, Institute for the Physics and Mathematics of the Universe (IPMU), Tokyo, Japan, January 2012.

“Gravity Workshop at CWRU”, Case Western Reserve, Cleveland, OH, May 2011.

American Physical Society conference, Anaheim, CA, May 2011.

“Unraveling the Nature of the Universe with Current and Future Datasets”, Ohio State University, Columbus, OH, April 2011.

Royal Society Discussion Meeting, "Cosmological Tests of General Relativity", London, UK, February 2011.

"New Horizons in Particle Cosmology", University of Pennsylvania, Philadelphia, December 2009.

"Understanding the Dark Sector", Aspen Center of Physics Winter Conference, Aspen, CO, January 2009.

"Branes, Strings and Inflation" micro-symposium, Princeton University, Princeton, NJ, October 2008.

"COSMO'08", Madison, WI, August 2008.

Great Lakes Cosmology Workshop, Carnegie Mellon University, Pittsburgh, PA, June 2008.

11th Northeast String Cosmology workshop, Columbia University, New York, NY, May 2008.

"A Decade of Dark Energy", Space Telescope Science Institute Symposium, Baltimore, MD, May 2008.

National Academy of Sciences Annual Meeting, Washington DC, April 2008.

Benjamin Dean Lecture, California Academy of Sciences, San Francisco, CA, March 2008.

"Origins & Observations of Primordial Non-Gaussianity", Perimeter Institute, Waterloo, ON, March 2008.

National Academy of Sciences, U.S. Kavli Frontiers of Science Symposium, Irvine, CA, November 2007.

XIXèmes Rencontres de Blois "Matter and energy in the Universe", Blois, France, May 2007.

U.K. Annual Theory Meeting, Durham University, England, December 2006.

"Cosmology on the Great Lakes", Perimeter Institute, Canada, November 2006.

"Cosmic Frontiers", Durham University, England, July 2006.

SLAC Summer Institute "The Next Frontier: Exploring with the LHC.", Stanford, CA, July 2006.

The 14th International Conference on Supersymmetry and Unification of Fundamental Interactions, "SUSY'06", Irvine, CA, June 2006.

External Correlations of the CMB and Cosmology Workshop, Fermilab, Batavia, IL, May 2006.

PUBLIC UNDERSTANDING OF SCIENCE & OUTREACH TALKS

Afterschool Universe, Southside Community Center, Ithaca, NY, 2012-2013 biweekly.

NY Space Grant talk, Tully Middle School, May 2011.

Southern Cayuga Schools Planetarium, public talk, NY, April 2011.

Science Cabaret On Air, radio interview, WICB 97.3FM, Ithaca College, 2010.

Afterschool Universe, Greater Ithaca Activities Center, weekly, Ithaca, 2010.

Friends of the Cornell Department of Astronomy presentation, 2007, 2009.

Talk on cosmology to New York City Chapin Girls' Middle School students, Cornell, 2007-2009.

Steward Observatory Public Lecture, University of Arizona, Tuscon, AZ, February 2009.

Benjamin Dean Lecture, California Academy of Sciences, San Fransisco, CA, March 2008.

Public lecture at the Southern Cayuga Central Schools Planetarium, Aurora, NY, October 2007.

Public lecture at the Wings of Eagles Discovery Center outreach program in Elmira, NY, February 2007.

Talk for the Cornell Center for Materials Research "Ask a Scientist Live" after-school program, Nottingham, High School, Syracuse, January 2007.

Talk on cosmology to Ithaca High School science students, May 2006.

Discussion panel member, Expanding Your Horizons Conference (encouraging middle school girls' interest in science, maths and engineering), Cornell University, April 2006.

Cornell Department of Astronomy presentation for University Alumni Weekend, October 2005.