

The First 20 Years of CCAPP

John Beacom



The Ohio State University's Center for Cosmology and AstroParticle Physics



Introduction

Prehistory of CCAPP

- Beginnings:
 - Ohio State Astronomy: much less impact; no connections to physics
 - Ohio State Physics: much less impact; no connections to astronomy
- 80s and 90s: slow, crucial growth
 - Astronomy: Darren DePoy, Andy Gould, Smita Mathur, Pat Osmer, Brad Peterson, Marc Pinsonneault, Rick Pogge, Barbara Ryden, David Weinberg
 - Physics: Bob Scherrer, Gary Steigman, Terry Walker
- Early 2000s: fast growth
 - Astronomy: Chris Kochanek (2003), Jennifer Johnson (2005), Paul Martini (2005), Kris Stanek (2005)
 - Physics: John Beacom (2004), Jim Beatty (2004), plus Richard Hughes and Brian Winer expanded from HEP to join GLAST (Fermi)

Building something big takes sustained vision and investment

Our Origin Story (2006)

1. Astronomy external review recommends growth in connections to Physics
Physics external review recommends growth in connections to Astronomy
Ohio State runs a competition for Targeted Investments in Excellence (TIE)

A PROPOSAL FROM THE COLLEGE OF MATHEMATICAL AND PHYSICAL SCIENCES

Center for Cosmology and Astro-Particle Physics

2. Action:

Executive Summary

Importance and Impact The Departments of Astronomy and Physics are establishing a Center for Cosmology and Astro-Particle Physics (CCAPP), which will build on the already-recognized collaborative environment between the two departments, and capitalize the opportunity to pursue research at the interface of cosmology, astrophysics, and high energy physics, specifically, to explore fundamental

3. Success! CCAPP funded as one of ten new initiatives across the university

Fortune favors those who are ambitious and prepared

Our Mission Statement

To promote world-leading efforts in studies of dark energy, dark matter, the origins of cosmic structure, and the highest energy particles in the Universe,

through strategic investments
and through a highly visible postdoc, visitor, and workshop program

that advances knowledge,
mentors the next generation of scientists,
and brings the exciting results to the public.

Leadership

First epoch (2006–2011)

Director



Walker

SB Chair



Steigman

Staff



McGarry

Student



Krehnovi

Second epoch (2011–2026)

Director



Beacom

SB Chairs



Steigman, Weinberg, Thompson, Martini,
Peter, Thompson, Kochanek, Hirata

Staff



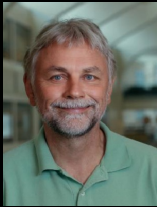
Colarosa,
Paterson

Other Original Faculty

Still active in CCAPP:



Beatty



Honscheid



Johnson



Mathur



Pinsonneault



Pogge



Ryden



Stanek



Winer

Not still active in CCAPP:



Gould



Hughes



Kass



Osmer



Peterson

Building up science and community took many hands

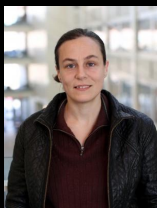
Production

Faculty Recruitment

Since 2006, we have added outstanding new faculty across an expanding range of topics



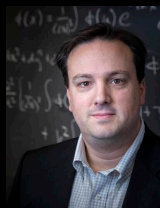
Boveia



Carpenter



Connolly



Giblin



Gorda



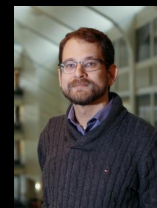
Hirata



Heidmann



Hughes



Leroy



Lisa



Lopez



Orban



Peter



Ross



Stamatikos



Ting



Schlingman



Thompson



Vallari



Wilkins

Reveals and increases our strength and visibility

CCAPP Fellows (Alumni)

CCAPP Fellows were proposed to be the *glue between faculty groups*

Eduardo Rozo (2006–2009)
Haojing Yan (2008–2011)
Jennifer Gaskins (2008–2011)
Carsten Rott (2008–2009)
Stelios Kazantzidis (2008–2014)
Michael Stamatikos (2009–2012)
Michael Mortonson (2009–2012)
Shunsaku Horiuchi (2009–2012)
Tim Eifler (2009–2012)
Kohta Murase (2010–2012)
Basudeb Dasgupta (2010–2012)
Peter Melchior (2011–2015)

Eric Huff (2012–2016)
Hee-Jong Seo (2013–2014)
Jonathan Blazek (2013–2016)
Adi Zolotov (2014–2015)
Anna Nierenberg (2014–2017)
Mauricio Bustamante (2014–2017)
Ashley Ross (2014–2018)
Jordan Hanson (2015–2017)
Katie Auchetl (2015–2018)
Tim Linden (2015–2019)
Ying Zu (2016–2017)
Alexia Lewis (2016–2017)

Michael Troxel (2016–2018)
Niall MacCrann (2016–2019)
Ami Choi (2016–2021)
Tuguldur Sukhbold (2016–2021)
Heidi Wu (2017–2020)
Johnny Greco (2018–2021)
Steven Prohira (2018–2022)
Jack Elvin-Poole (2018–2022)
Juri Smirnov (2019–2021)
Yi-Kuan Chiang (2019–2021)
Amy Sardone (2019–2023)
Fiorenzo Vincenzo (2019–2021)

Anna Porredon (2019–2022)
Subhash Bose (2019–2023)
Samantha Benincasa (2020–2022)
Ivan Esteban (2020–2023)
Takahiro Sudoh (2021–2023)
Christine Daher (2022–2024)
Andrei Cuceu (2021–2024)
Chun-Hao To (2021–2024)
Sumit Sarbadhicary (2021–2024)
Peter Taylor (2022–2025)
Jung-Tsung Li (2021–2025)

47 alumni

Postdocs are *a foundational element of our success*

CCAPP Affiliate Fellows (Alumni)

CCAPP Affiliate Fellows strengthen and broaden our community

Hasan Yuksel (2005–2008)
Mandeep Gill (2006–2009)
Kyler Kuehn (2007–2009)
Brian Baughman (2007–2010)
Matthew Pieri (2007–2010)
Eric Grashorn (2008–2012)
Patrick Allison (2010–2013)
Zhaoyu Yang (2011–2013)
Ralph Schoenrich (2011–2013)
Paul Sutter (2011–2016)
Gisella De Rosa (2012–2015)
Sheldon Campbell (2012–2015)

Gail Zasowski (2012–2015)
Carl Pfendner (2012–2018)
Jessica Goodman (2013–2016)
Kelly Denney (2013–2016)
Michael Sutherland (2013–2018)
Demitri Muna (2014–2017)
Francesco Capozzi (2017)
Emma Tolley (2017–2020)
Dyas Utomo (2017–2020)
Debopam Som (2018–2020)
Danielle Berg (2018–2020)
Mathieu Vrand (2019–2022)

Alexander Stephan (2020–2023)
Keith McBride (2021–2023)
David Martin (2021–2023)
Mehdi Rezaie (2021–2024)
Adam Wheeler (2022–2024)
Ryuichiro Hada (2022–2024)
Ryan Chown (2023–2025)
Erwin Chen (2024–2025)
Stephan Meighen-Berger (2022–2025)
Soumangsu Chakraborty (2024–2025)

34 alumni

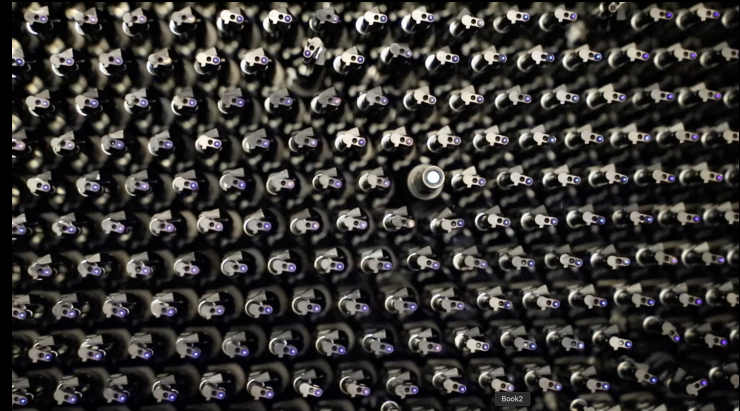
Postdocs are a foundational element of our success

Science Arc: Redshift Surveys

DES



DESI



SDSS



Roman



+ theory!

Science Arc: Ultrahigh-Energy Neutrino Searches

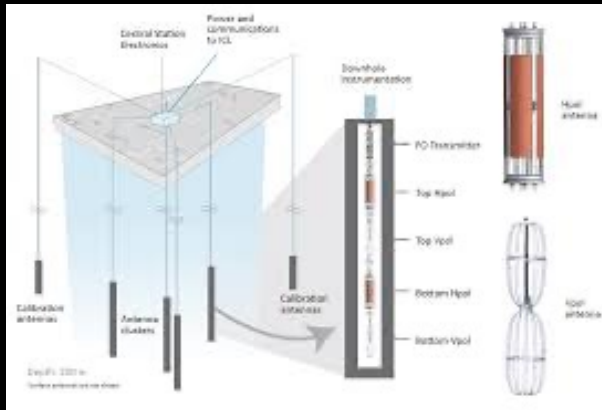
ANITA



PUEO



ARA

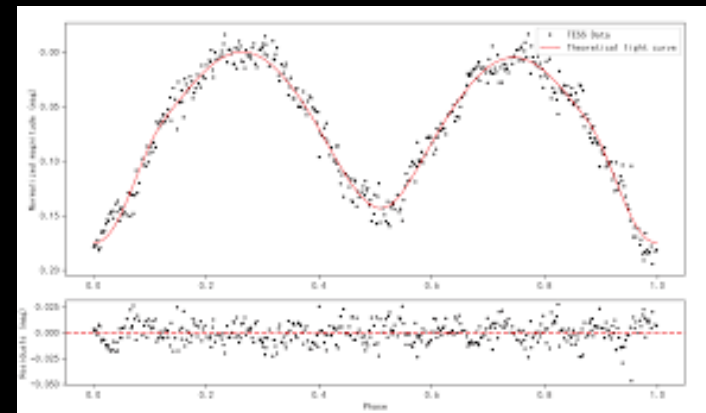
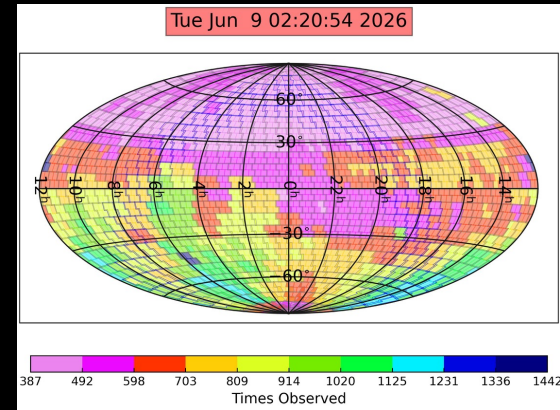


RNO-G



+ theory!

Science Arc: All-Sky Automated Survey for SuperNovae



+ theory!

Price Prize

The Dr. Pliny A. and Margaret H. Price Prize recognizes the best astro students worldwide



Endowed by Steve
Price and Jill Levy

2025, Vedant Chandra
2025, Gokul Srinivasaragavan
2024, Hanjue Zhu
2024, Abigail Lee
2023, Dhayaa Anbajagane
2023, Jason Hinkle
2022, Cyndia Yu
2022, Maddie Lucey
2021, Kaeli Hughes
2021, Erin Kado-Fong
2020, Carl Fields

2020, Chiara Salemi
2019, Carolyn Raithel
2019, Shany Danieli
2018, Kareem El-Badry
2018, Jose Zorrilla Matilla
2017, Charlotte Mason
2017, Nicholas Rodd
2016, Susan Clark
2016, Yuan-Sen Ting
2015, Eric Carlson
2015, Adrian Price-Whelan

2014, Shea Garrison-Kimmel
2014, Alessandro Sonnenfeld
2013, Liang Dai
2013, Jessica Stockham
2012, Charlotte Stregge
2012, Chris Williams
2011, Sayan Chakraborti
2011, Michele Fumagalli
2010, Jo Bovy
2009, Charlie Conroy

A major factor in building visibility worldwide

Example imitation: The winner (of the Evans Prize) ... *deliver a public lecture in Irvine*. In addition to covering travel and local expenses, the **Price Prize** provides

Biard Lecture

The R. Jack and Forest Lynn Biard Lecture brings our cutting-edge research to the public



Endowed by estate gift of
Captain Forrest R. Biard

2026, Klaus Honscheid
2025, Sean Carroll
2024, Grant Tremblay
2022, Sera Markoff
2021, Katie Mack
2019, Dava Sobel
2018, Mike Brown
2017, Alan Stern

2014, Max Tegmark
2013, Julianne Dalcanton
2012, Jill Tarter
2012, J. Richard Gott III
2010, John Glenn, John Grunsfeld, Harrison Schmitt
2009, Mark Devlin, Paul Devlin
2008, Rocky Kolb
2007, Robert Kirshner

Along with numerous other public lectures on our topics: CCAPP special events, the Smith Lecture (Physics), and Science Sundays (College of Arts and Sciences)

A major factor in building visibility at Ohio State

Student Opportunities

About 120 students have completed Ph.D. here; about 60 more are on the way



Students are also a foundational element of our success

Have We Met Our Mission?

To promote world-leading efforts in studies of dark energy, dark matter, the origins of cosmic structure, and the highest energy particles in the Universe,
through strategic investments
and through a highly visible postdoc, visitor, and workshop program
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mentors the next generation of scientists,
and brings the exciting results to the public.

Lots of internal and external evidence for yes

What Makes This Work at Ohio State?

Science and community like this doesn't just happen — we must choose it

Structural elements:

Smith Group, Jones Group, etc. → overlaps → multiply connected web

Hierarchical → flat, where we are all colleagues who learn from each other

Values elements:

People do their best work when they are happy and challenged but supported

Leading is serving, meeting people where they are

Recruiting elements:

Seek people who are ambitious but prosocial

Seek people with broad interests and many handles

This only works with constant effort by all

Induction

A Bright Future

Real challenges are ahead, but we are well positioned and accelerating

Wave of productivity:

Biggest we have ever been, with huge recent growth
Long-sought science goals are within reach

Outstanding community:

Extremely diversified portfolio in cosmology, astroparticle physics, and connections
Internal connectivity grew with increasing breadth and size

New leadership:

I am stepping down in August after 15 years of service
David Weinberg will be the next Director

Building something like CCAPP takes patience, but it rewards it richly

Thanks to all!