

KAVLI INSTITUTE MEDIA EXPERTS LIST
ASTROPHYSICS
(Listed by Institute)

**Kavli Institute for Cosmological Physics at
the University of Chicago**

TIME ZONE: CST

John Carlstrom
Director, KICP

S. Chandrasekhar Distinguished Service Professor in Astronomy &
Astrophysics and Physics, Enrico Fermi Institute, and the College

Public Affairs Office:
Steve Koppes
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Areas of Expertise:

- * Space: Dark Energy, Cosmic Background Radiation
- * Astronomy and Astrophysics: South Pole

Carlstrom is leading two cosmological research projects, the South Pole Telescope in Antarctica and the Sunyaev-Zeldovich Array at the Owens Valley Radio Observatory in California. Both projects are aimed at revealing new details regarding a mysterious phenomenon called dark energy, which makes the expansion of the universe accelerate. His honors include a MacArthur Fellowship in 1998 and election to the National Academy of Sciences in 2002.

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**Kavli Institute for Cosmological Physics at
the University of Chicago**

TIME ZONE: CST

Juan Collar

Assistant Professor in Physics

**Kavli Institute for Cosmological Physics at
the University of Chicago**

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TIME ZONE: CST

Areas of Expertise:

- * Dark Matter
- * Neutrino Detectors
- * Weakly Interacting Massive Particles (WIMPs)

Collar's research group has developed the Chicagoland Observatory for Underground Particle Physics (COUPP) in its quest to detect dark matter. This unknown form of matter accounts for more than 90 percent of all matter in the universe. Although invisible to telescopes, scientists can observe the gravitational influence it exerts on galaxies. COUPP sits 300 feet underground in a test chamber at Fermi National Accelerator Laboratory. Collar's work focuses on developing innovative methods for detecting Weakly Interacting Massive Particles (WIMPs) and other hypothetical subatomic particles that could account for dark matter.

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**Kavli Institute for Cosmological Physics at
the University of Chicago**

TIME ZONE: CST

James Cronin

Public Affairs Office:

University Professor Emeritus in Physics

Steve Koppes
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Areas of Expertise:

- * Auger Observatory
- * Enrico Fermi
- * Physics: Particle physics
- * Astrophysics: Cosmic rays

Cronin shared the Nobel Prize in physics in 1980 for showing that the laws of nature operate differently on matter and antimatter. Without this difference, no matter would exist in the universe at all. More recently, Cronin co-lead the effort to build the Auger Observatory in Argentina. The Auger collaboration, consisting of 250 scientists from 16 countries, aims to track down the mysterious source of rare but extremely powerful cosmic rays that periodically bombard Earth. Cronin's honors include the National Medal of Science and election to the National Academy of Sciences and The Royal Society of London.

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**Kavli Institute for Cosmological Physics at
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TIME ZONE: CST

Joshua Frieman

Professor in Astronomy & Astrophysics

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Areas of Expertise:

- * Cosmology
- * Dark Energy
- * Theoretical Astrophysics

Joshua Frieman is a co-founder of the Dark Energy Survey, an international collaboration devoted to investigating the mysterious force causing the universe to speed up. Through the Sloan Digital Sky Survey, Frieman has analyzed the patterns that galaxies and galaxy clusters form across vast expanses of the universe. He also leads the team on the Sloan Survey that is using exploding stars as a way to measure the expansion of the universe throughout its history. In addition to his faculty appointment at the University of Chicago, Frieman is a member of the Theoretical Astrophysics Group at Fermi National Accelerator Laboratory.

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**Kavli Institute for Cosmological Physics at
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TIME ZONE: CST

Edward Kolb

Professor in Astronomy & Astrophysics

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Areas of Expertise:

- * Space
- * Astronomy and Astrophysics: Cosmology, Big Bang, Creation of the Universe

Kolb's field of research is the application of elementary particle physics to the very early universe. He particularly focuses on attempting to understand physical processes that occurred in the very earliest moments of the big bang. In these very early moments the density, energy and pressure of the universe resembled the conditions obtained in the collisions of particles at high-energy accelerators. He is a founding head of the NASA/Fermilab Astrophysics Group.

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**Kavli Institute for Cosmological Physics at
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TIME ZONE: CST

Stephan Meyer

Professor in Astronomy & Astrophysics

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Areas of Expertise:

* Space

* Astronomy and Astrophysics: Cosmic Microwave Background Radiation, Cosmology, Scientific Ballooning

Meyer is a member of the science team of NASA's Wilkinson Microwave Anisotropy Probe, a mission that measured the temperature of the cosmic microwave background radiation (the afterglow of the big bang) over the full sky with unprecedented accuracy. WMAP is the successor to the Cosmic Microwave Background Explorer mission. Both missions helped scientists answer fundamental questions about the origin and fate of the universe. Meyer was a member of the COBE science team that created a sensation in 1992 by detecting the first fluctuations in the cosmic microwave background.

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**Kavli Institute for Cosmological Physics at
the University of Chicago**

TIME ZONE: CST

Angela Olinto

Professor in Astronomy & Astrophysics

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Areas of Expertise:

* Space: Neutron Stars

* Astronomy and Astrophysics: High-Energy Cosmic Rays, Cosmology

Olinto studies the unknown origins of both ultra-high-energy cosmic rays and of the magnetic fields that pervade all objects in the universe. Ultra-high-energy cosmic rays enter the atmosphere with so much energy that they produce a giant cascade of many tens of billions of secondary particles that can be observed by large detectors on Earth. She is investigating multiple possibilities, including the proposal that they come from supermassive black holes in the centers of nearby galaxies, or that they are decaying particles left over from the big bang.

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**Kavli Institute for Cosmological Physics at
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TIME ZONE: CST

Simon Swordy

James Franck Professor in Physics

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Areas of Expertise:

* Space: Cosmic rays, Gamma rays

* Astronomy and Astrophysics: Scientific Ballooning

As a member of the VERITAS (Very Energetic Radiation Imaging Telescope Array System) collaboration, Swordy is looking for evidence of gamma-ray emissions from the remnants of exploding stars. Such evidence could help identify the mysterious source of high-energy cosmic rays, which are subatomic scraps of matter that bombard Earth from all directions. When construction is complete, VERITAS will consist of an array of four telescopes on Arizona's Kitt Peak.

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**Kavli Institute for Cosmological Physics at
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TIME ZONE: CST

Michael Turner

Bruce & Diana Rauner Distinguished Service Professor in Astronomy
& Astrophysics; Chief Scientist, Argonne National Laboratory

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Areas of Expertise:

* Space

* Astronomy and Astrophysics: Big Bang, Cosmology, Dark Energy, Dark Matter

Michael Turner's research focuses on the application of modern ideas in elementary particle theory to cosmology and astrophysics. He is a member of the National Academy of Sciences and a leading proponent of the theory of the origin of the universe known as the "Cold Dark Matter Theory." Turner chaired the National Research Council's Committee on the Physics of the Universe, which in 2003 published Connecting Quarks with the Cosmos. The report assessed the scientific opportunities that occur on the frontiers of research at the intersection of physics and astronomy.

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**Kavli Institute for Cosmological Physics at
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TIME ZONE: CST

Bruce Winstein

Samuel Allison Distinguished Service Professor in Physics

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Areas of Expertise:

* Space: Cosmology, Cosmic microwave background radiation

* Physics: Particle physics, High-energy physics

Bruce Winstein studies the cosmic microwave background radiation, the afterglow from the big bang, for information about the physical conditions in the early universe. Before turning his attention to cosmology in recent years, Winstein specialized in particle physics. A member of the National Academy of Sciences, he led a research team that in 1999 announced making the definitive observation of a new type of CP violation. CP (charge-parity) violation is the phenomenon that led to the vast predominance of matter over antimatter in the universe.

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