

2019 Buhl Lecture

# Looking Backwards with the Cosmic Microwave Background

**Abstract:** The cosmic microwave background (CMB) emanates from the brilliant plasma that suffused the universe in its first moments. As a relic of the very early universe, the CMB encodes information not only about the large-scale dynamics and structure of the universe, but also about its earliest instants and its likely future. Since the first deliberate measurements of the radiation comprising the CMB in the mid-1960s, our capacity to detect and decode its cosmological signatures has increased remarkably. To study the largest length scales in the universe, we use thousands and thousands of tiny thermometers to measure the fluctuations in the heat delivered by the radiation and special-purpose telescopes located in some of the most extreme environments on and above the Earth's surface. In her lecture, Staggs will discuss the CMB, describe some of the innovative instrumentation and conclude with a discussion of the prospects for even more knowledge being pried from the CMB.



Suzanne Staggs works at the forefront of research on the cosmic microwave background as the Principal Investigator of Advanced ACTPol and as a founding member of the Simons Observatory. Her present research focuses on searching for the signature in the CMB polarization data of gravity waves produced in the primordial universe and in using the CMB as a backlight to probe the growth of gravitationally-bound structures over the last 13 billion years. After earning her Ph.D. in physics from Princeton University in 1993, Staggs was a Hubble Fellow at the University of Chicago and then returned to Princeton as a member of the faculty. She is currently the Henry deWolf Smyth Professor of Physics at Princeton.

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Image Credit: Dan King, Bluecadet

**Suzanne Staggs**  
Princeton University

**October 8, 2019**  
Mellon Institute Auditorium  
3:00 p.m.

**Reception immediately following,  
free and open to the public.**