



**Ronald E. Hatcher**  
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*Taking the Baby Picture of the Universe*

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**ABSTRACT:**

Observations of the microwave background, the left-over heat from the big bang, are snap-shots of the universe only three hundred thousand years after the big bang. These observations have answered many of the questions that have driven cosmology for the past few decades: How old is the universe? What is its size and shape? What is the composition of the universe? How do galaxies emerge? By going to some of the most forbidding places on the planet (the Atacama Desert and the South Pole) and by launching satellites beyond the orbit of the moon, we have made significant progress on these questions.

While we have learned much, many key cosmological questions remain unanswered: what happened during the first moments of the big bang? what is the dark energy? What were the properties of the first stars? I will discuss how future observations may start to answer these new and deeper questions.

**BIOGRAPHY:**

David N. Spergel is the Charles Young Professor of Astronomy and Chair of the Department of Astrophysical Sciences at Princeton University. David Spergel is the Founding Director for the Center for Computational Astrophysics at the Flatiron Institute.



Spergel received his undergraduate degree from Princeton in 1982 and his PhD from Harvard in 1985. After two years as a long-term member at the Institute for Advanced Study, he joined the Princeton faculty in 1987. Spergel is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, and has been awarded the MacArthur Fellowship, the Gruber Prize, the Shaw Prize, Sloan Fellowship and the Presidential Young Investigator award. Time Magazine listed Spergel in its 2001 issue as one of America's top scientists and in its 2012 issue as one of the 25 most influential people in Space. Spergel serves as Chair of the NAS Space Studies Board and is co-chair of the WFIRST science working group.