

The Eighteenth Annual Moti Lal Rustgi Memorial Lecture

Friday, April 20, 2012
225 NSC, 5:00 pm
UB Amherst Campus

Dr. John C. Mather

NASA Goddard Space Flight Center and University of Maryland

History of the universe in a nutshell: from the Big Bang to life and the end of time

The history of the universe in a nutshell, from the Big Bang to now, and on to the future – John Mather will tell the story of how we got here, how the Universe began with a Big Bang, how it could have produced an Earth where sentient beings can live, and how those beings are discovering their history. Mather was Project Scientist for NASA's Cosmic Background Explorer (COBE) satellite, which measured the spectrum (the color) of the heat radiation from the Big Bang, discovered hot and cold spots in that radiation, and hunted for the first objects that formed after the great explosion. He will explain Einstein's biggest mistake, how Edwin Hubble discovered the expansion of the universe, how the COBE mission was built, and how the COBE data support the Big Bang theory. He will also show NASA's plans for the next great telescope in space, the James Webb Space Telescope. It will look even farther back in time than the Hubble Space Telescope, and will peer inside the dusty cocoons where stars and planets are being born today. It is capable of examining Earth-like planets around other stars using the transit technique, and future missions may find signs of life.

Dr. John C. Mather is a Senior Astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, MD, where he specializes in infrared astronomy and cosmology. He received his bachelor's degree in physics at Swarthmore College and his doctorate in physics at the University of California, Berkeley. As an NRC postdoctoral fellow at the Goddard Institute for Space Studies (New York City), he led the proposal efforts for the Cosmic Background Explorer (74-76), and came to GSFC to be the Study Scientist (76-88), Project Scientist (88-98), and the Principal Investigator for the Far IR Absolute Spectrophotometer (FIRAS) on COBE. He and his team showed that the cosmic microwave background radiation has a blackbody spectrum within 50 parts per million, confirming the Big Bang theory to extraordinary accuracy. The COBE team also discovered the cosmic anisotropy (hot and cold spots in the background radiation), now believed to be the primordial seeds that led to the structure of the universe today. It was these findings that led to Dr. Mather receiving the Nobel Prize in 2006. Dr. Mather is the recipient of many other honors and awards, including his 2007 listing in Time Magazine's 100 Most Influential People in The World. Mather now serves as Senior Project Scientist (95-present) for the James Webb Space Telescope, the successor to the great Hubble Space Telescope.

This Lecture is Free and Open to the Public
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