

COBE team honored



PETER GRUBER
FOUNDATION
INTERNATIONAL
AWARDS

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John Mather and the Cosmic Background Explorer (COBE) team will jointly receive the 2006 Gruber Cosmology Prize for their ground-breaking studies confirming that our universe was born in a hot Big Bang.

The gold medal and a \$250,000 cash prize will be awarded at the opening ceremony of the International Astronomical Union's General Assembly in Prague on Tuesday 15 August 2006.

The instruments aboard NASA's Cosmic Background Explorer, launched in 1989, looked back over thirteen billion years to the early universe.

COBE showed us that the young universe was hot, dense, and almost uniform; that it contained weak fluctuations or lumps that grew into the galaxies and stars we see today; that these fluctuations were the consequence of a hot Big Bang; and that the universe is filled with diffuse radiation from previously unknown galaxies.

COBE was NASA's first dedicated cosmology mission, and the culmination of a fifteen-year dream for John Mather, who initiated the project with a proposal to NASA in 1974. NASA formed the science team in 1976, including members of two competing proposal teams, and NASA's Goddard Space Flight Center built the COBE in Greenbelt, MD.

As COBE's scientific leader, Mather worked to keep a 1,500 strong project team focused on the science. There were many hurdles, including the Challenger Shuttle tragedy, which sent the team back to the drawing board, to redesign COBE for launch by a Delta rocket.

Now Mather still loves to look back in time. As chief scientist for the James Webb Space Telescope (JWST), he is hoping that it will see back to within just 200 million years of the Big Bang.

"We're explorers," he says. "We need to understand where we and our universe came from."

The Prize will be shared by John Mather and the COBE science working group – representing the large project team.

"COBE profoundly affected our understanding of cosmic evolution," said Peter Gruber, chairman of the Peter Gruber Foundation. "I'm delighted to honor John Mather and the COBE team for their remarkable achievements."

John Mather will give the Peter Gruber Lecture at the IAU Congress in Prague on Wednesday 16 August on COBE, JWST and what the future holds for cosmologists.

Since 2000, the Cosmology Prize of the Peter Gruber Foundation has recognized individuals for their ground-breaking theoretical, analytical, or conceptual discoveries. The Prize carries a gold medal and a \$US250,000 cash prize.

The Cosmology prize is awarded in partnership with the International Astronomical Union.

The Foundation was founded in 1993 and established a record of charitable giving principally in the U.S. Virgin Islands, where it is located. The Foundation supports five international awards: Cosmology; Justice; Genetics, Neuroscience; and Women's Rights.

For interviews please contact:

- Gruber media advisor: Niall Byrne, +61 417 131 977 or niall@scienceinpublic.com.
- IAU press officer: Lars Lindberg Christensen, +49 173 38 72 621, lars@eso.org
- Goddard contact: Chris Wanjek, +1 301 286 4453, Christopher.Wanjek.1@gsfc.nasa.gov

For further information please visit www.petergruberfoundation.org.

Background information

The official citation reads:

The 2006 Cosmology Prize of the Peter Gruber Foundation is proudly presented to Dr. John Mather and the COBE team for their ground-breaking studies of the spectrum and spatial structure of the relic radiation from the Big Bang.

Their instruments aboard NASA's Cosmic Background Explorer showed that the young universe was hot, dense, and almost uniform, that it contained weak fluctuations which grew into all present-day structure, and that these fluctuations could have been generated by physical processes only if the universe evolved differently at the earliest times than supposed by previous standard models.

With these results, the COBE team, led by John Mather, set cosmology's agenda for decades to come and profoundly affected our understanding of cosmic evolution.

John Mather will receive half the Prize. The balance will be shared by the other eighteen members of the Science Working Group: Charles L. Bennett; Nancy W. Boggess; Edward S. Cheng; Eli Dwek; Samuel Gulkis; Michael G. Hauser; Michael A. Janssen; Thomas Kelsall; Philip M. Lubin; Stephan S. Meyer; S. Harvey Moseley; Thomas L. Murdock; Richard A. Shafer; Robert F. Silverberg; George F. Smoot; Rainer Weiss; the estate of David T. Wilkinson (deceased); Edward L. Wright.

The past winners of the Cosmology Prize are:

- **James E. Gunn** from Princeton University (2005) – Gunn not only led the design of a silicon-based camera for the Hubble Space Telescope, he then had the original concept for the Sloan Digital Sky Survey - the most ambitious astronomical survey project ever undertaken.
- **Alan Guth** from MIT and **Andrei Linde** from Stanford received the 2004 prize for their roles in developing and refining the theory of cosmic inflation.
- **Rashid Alievich Sunyaev**, Director of Germany's Max-Planck-Institut fuer Astrophysik, received the 2003 prize for his pioneering work on the nature of the cosmic microwave background and its interaction with intervening matter.
- **Vera Rubin**, from the Carnegie Institution of Washington, discovered that much of the Universe is unseen black matter, through her studies of the rotation of spiral galaxies. She received the 2002 prize.
- British Astronomer Royal **Martin Rees** received the 2001 prize for his extraordinary intuition in unraveling the complexities of the universe.
- **Allan R. Sandage**, Carnegie Institution of Washington, and **Phillip J. E. (Jim) Peebles** from Princeton University, jointly won the inaugural prize in 2000. A student of Hubble, Sandage has been relentless in pursuit of the true values of the Hubble constant; the deceleration parameter; and the age of the universe. Peebles has advanced our understanding of how energy and matter formed the rich patterns of galaxies observed today.

The Cosmology Advisory Board, which selects each year's recipient, comprises:

James Peebles, Princeton University; **Ronald Ekers**, Australia Telescope National Facility; **Jocelyn Bell Burnell**, University of Bath; **Roger Penrose**, Oxford; **Peter Galison**, Harvard University; **Simon D.M. White**, Max-Panck-Institut fuer Astrophysik; **Jacqueline Bergeron**, Institut d'Astrophysique-CNRS. **Owen Gingerich** of the Harvard-Smithsonian Center for Astrophysics, and **Virginia Trimble** of the University of California at Irvine, serve as special cosmology advisors to the Foundation.

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