

# “Nobel Talk”

(Plenary Session)



**Dr. John C. Mather**

Nobel Laureate, Physics, 2006

## The Future of Astronomy

New technology continues to transform astronomy by opening up new windows to the universe. From gravitational wave detectors, we now know that the gold we mine on Earth came from merging neutron stars long ago and far away. From millimeter wave radio observatories we see stars forming with signs of planets growing around them. From cameras in space we see thousands of exoplanets transiting in front of their stars. And the future will include adaptive optics on giant 30 meter telescopes on the ground, capable of revealing the heart on Pluto, without space travel, and of seeing the formation of young galaxies billions of years ago. I will outline some dreams of future telescopes and future discoveries, possibilities that may happen if we work for them.

---

Dr. John C. Mather is a Senior Astrophysicist in the Observational Cosmology Laboratory at NASA's Goddard Space Flight Center. His research centers on infrared astronomy and cosmology. 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 also the Principal Investigator for the Far IR Absolute Spectrophotometer (FIRAS) on COBE. He showed that the cosmic microwave background radiation has a blackbody spectrum within 50 ppm. As Senior Project Scientist (95-present) for the James Webb Space Telescope, he leads the science team, and represents scientific interests within the project management. He has served on advisory and working groups for the National Academy of Sciences, NASA, and the NSF (for the ALMA, the Atacama Large Millimeter Array, and for the CARA, the Center for Astrophysical Research in the Antarctic). He has received many awards including the **Nobel Prize in Physics, 2006**, for his precise measurements of the cosmic microwave background radiation using the COBE satellite.