PLANCK Reflector Programme

Penzias and Wilson Nobel Price in Physics 1978
PLANK Reflector Programme

DAWN OF TIME

tiny fraction of a second

inflation

380,000 years

13.7 billion years
Figure 7 shows the deviations from a blackbody spectrum with a temperature of 2.726 ± 0.010 K published 1994 (Mather et al. 1994). After careful studies of errors caused by the FIRAS calibrator (figure 4), the CMB temperature was finally given as 2.725 ± 0.002 K (Mather et al. 1999) with deviations from a blackbody spectrum less than 1 part in $10^5$. 

The smooth curve is the best fit blackbody spectrum.
PLANCK Reflector Programme
PLANCK Reflector Programme

The Nobel Prize in Physics 2006

"for their discovery of the blackbody form and anisotropy of the cosmic microwave background radiation"

John C. Mather

1/2 of the prize

USA

NASA Goddard Space Flight Center
Greenbelt, MD, USA

George F. Smoot

1/2 of the prize

USA

University of California Berkeley, CA, USA
PLANCK Reflector Programme
PLANCK Reflector Programme
PLANCK Reflector Programme
PLANCK Reflector Programme

Choice of orbit

Sun

Earth-Moon L3

Earth-Moon L4

Sun-Earth L3
(SOHO)

Moon

Earth

Sun-Earth L2

COSA

L2

1.5 Mkm

10°

Science data antenna (+/-10°)

Shadow cone (10°)

Spin axis

Boresight

Scan angle = 85°
DTU Space: PI status in the Planck mission ->
assuring Danish scientists direct access to
the Planck database

Planck planned to be launched in Spring 2009

Support from SNF and ESA - Følgeforskning
PLANK Reflector Programme

WMAP Q band (41 GHz)
PLANCK Reflector Programme

WMAP Synchrotron Map K band (23 GHz)
PLANCK Reflector Programme

WMAP Free – Free Map K band (23 GHz)
PLANCK Reflector Programme

WMAP Dust Map W band (94 GHz)
PLANCK Reflector Programme
PLANCK Reflector Programme

WMAP Internal Linear Combination Map (± 200 μK)
PLANCK Reflector Programme

A trip from Big Bang to present day Universe
PLANCK Reflector Programme

WMAP Internal Linear Combination Map (± 200 µK)
PLANCK Reflector Programme
PLANCK Reflector Programme
PLANCK Reflector Programme
PLANCK Reflector Programme
Cosmic Microwave Background Spectrum from COBE

TheorY and Observation Agree