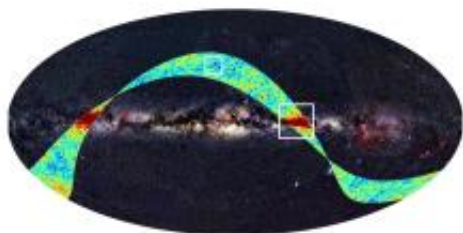


Planck first light yields promising results (w/ Video)

September 17 2009



A map of the sky at optical wavelengths shows a prominent horizontal band which is the light shining from our own Milky Way. The superimposed strip shows the area of the sky mapped by Planck during the First Light Survey. The colour scale indicates the magnitude of the deviations of the temperature of the Cosmic Microwave Background from its average value, as measured by Planck at a frequency close to the peak of the CMB spectrum (red is hotter and blue is colder). The large red strips trace radio emission from the Milky Way, whereas the small bright spots high above the galactic plane correspond to emission from the Cosmic Microwave Background itself. Credits: ESA, LFI & HFI Consortia. Background optical image: Axel Mellinger

(PhysOrg.com) -- Planck, ESA's mission to study the early Universe, started surveying the sky regularly from its vantage point at L2 on 13 August. The instruments of ESA's 'time machine' were fine-tuned for optimum performance in the period preceding this date. In preparation for routine scientific operations, their long-term stability has been verified by conducting a first 'trial' survey.

ESA's Planck microwave observatory is the first European mission designed to study the [Cosmic Microwave Background](#) - the relic radiation from the Big Bang.

Following launch on 14 May, check-outs of the satellite's subsystems were started in parallel with the cool-down of its instruments' detectors. The detectors are looking for variations in the temperature of the Cosmic Microwave Background that are about a million times smaller than one degree - this is comparable to measuring from Earth the body heat of a rabbit sitting on the Moon. To achieve this, Planck's detectors must be cooled to extremely low temperatures, some of them being very close to absolute zero ($-273.15.15^{\circ}\text{C}$, or zero Kelvin, 0K).

With check-outs of the subsystems finished, instrument commissioning, optimisation, and initial calibration was completed by the second week of August.

The 'first light' survey, which began on 13 August, is a two-week period during which Planck surveyed the sky continuously. It was carried out to verify the stability of the instruments and the ability to calibrate them over long periods to the exquisite accuracy needed.

The first light survey was completed on 27 August, yielding maps of a strip of the sky, one for each of Planck's nine frequencies. Each map is a ring, about 15 degrees wide, stretching across the full sky. Preliminary analysis indicates that the quality of the data is excellent.

Routine operations started as soon as the First Light Survey was completed, and surveying will now continue for at least 15 months without a break. In approximately 6 month's time, the first all-sky map will be assembled.

Within its allotted operational life of 15 months, Planck will be able to

gather data for two full independent all-sky maps. To fully exploit the high sensitivity of Planck, the data will require a great deal of delicate adjustments and careful analysis. It promises to contain a treasure trove of data that will keep both cosmologists and astrophysicists busy for decades to come.

Source: European Space Agency ([news](#) : [web](#))

Citation: Planck first light yields promising results (w/ Video) (2009, September 17) retrieved 27 April 2024 from <https://phys.org/news/2009-09-planck-yields-results-video.html>

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