A&A 518, E1 (2010)
DOI: 10.1051/0004-6361/201015246

Herschel: the first science highlights

Astronomy & Astrophysics
Special feature

Editorial

Herschel special feature

Far infrared astronomy has become a mature science. Starting with relatively simple instrumentation on balloon and airborne platforms in the 1970's and 80's, it came "of age" with the success of the IRAS mission, which made this wavelength range relevant for astronomy as a whole. This was followed up by the ISO, *Spitzer*, and AKARI missions, and finally by *Herschel* for which the planning goes right back to those early days of balloons and planes. *Herschel* is special due to its sensitivity and angular resolution at the wavelengths where many Galactic and extragalactic objects have their peak energy output and it is thus useful to explore what has been achieved in the first year of the mission. This is accomplished in this special feature of *Astronomy & Astrophysics*, which gives an overview of the results, as well as illustrating some of the highlights from the first year of operation.

The far infrared and submillimeter wavelength ranges are important for many reasons but perhaps most fundamentally because starforming regions emit the bulk of their energy at wavelengths between 10 and 600 μm. That the atmosphere is opaque over much of this wavelength range has thus impeded our understanding of the formation of planets, stars, and galaxies. Over the past 40 years, this impediment has gradually been removed, and the very varied results obtained show what the far infrared can teach us. Perhaps most impressive is the range of subjects covered in this feature, including studies of planetary atmospheres and Solar System bodies, stars and star formation, interstellar medium and molecular clouds, extragalactic objects at high and low redshifts, as well as cosmology. We thus present here 152 articles with results on a vast variety of topics.

C.M. Walmsley, C. Bertout, F. Combes, A. Ferrara,
T. Forveille, T. Guillot, A. Jones, and S. Shore
Astronomy & Astrophysics Editors