

[초IS-01] Exploring the Terahertz Universe: Capabilities and Early results from the Herschel Space Observatory

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Herschel is a cornerstone mission of the European Space Agency (ESA), with major involvement from NASA. The PACS and SPIRE instruments are moderate resolution imaging spectrometers and photometers that together cover the decade in wavelength from 600 to 60 microns, with spectral resolution as high as 2000. HIFI is a single pixel dual-polarization heterodyne spectrometer that covers frequencies between 470 GHz and 1950 GHz (600 microns to 150 microns wavelength) with a maximum spectral resolution in excess of 1 million. Following launch (together with the Planck cosmology mission) on May 16, 2009, Herschel entered its L2 halo orbit, and after commissioning, normal science observations began in Fall 2009. At the present time, instrumental performance is close to or better than that expected before launch. In this talk I review the characteristics of the Herschel Space Observatory and the capabilities of its three science instruments. I will also discuss some of the highlights of results from Herschel. The access with a suite of high sensitivity imaging and spectroscopy systems to a largely unexplored portion of the spectrum has resulted in an exceptionally wide range of discoveries, ranging from the Cosmic Infrared Background and observations of distant galaxies, to studies of star formation through high resolution spectroscopy of molecular clouds in the Milky Way and study of water in different objects in our solar system. Herschel is expected to continue operation through early-mid 2013.