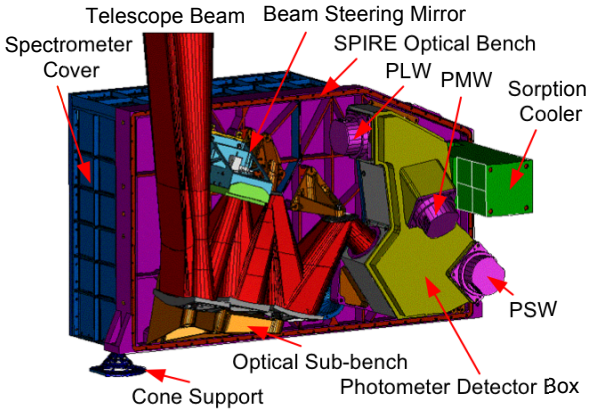
SPIRE is one of three scientific instruments on board of ESA's Herschel Space Observatory, exploring the Universe at infrared wavelengths between 194 and 671 μm.

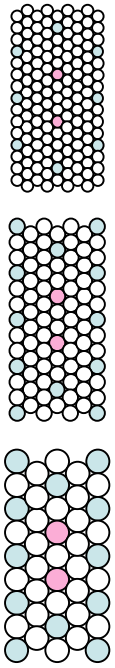
SPIRE

Spectral and Photometric Imaging Receiver



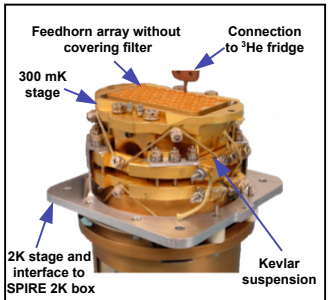
Imaging Photometer

Simultaneous observation in 3 bands
139, 88, and 43 pixels
Wavelengths: 250, 350, 500 μm
$\lambda/\Delta\lambda \sim 3$
FOV 4' x 8', beams 18.1", 25.2", 36.6"

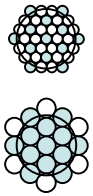


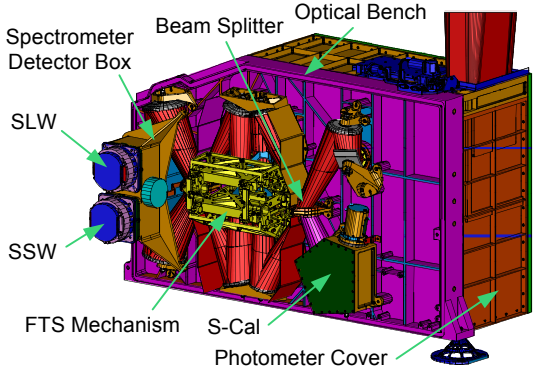
General

Beam Steering Mirror
T= 0.3 K by ^{3}He sorption cooler.
Hexagonally packed Spider-web bolometer arrays.



Detector Assembly





Imaging Fourier Transform Spectrometer

Simultaneous imaging observation of the whole spectral band
37 and 19 pixels
Wavelength Range: 194-313, 303-671 μm
Resolution: 0.04, 0.24, 0.83 cm^{-1}
Circular FOV 2.0' diameter, beams 17-21", 29-42"

Photometer Sensitivities*

Wavelengths (μm)	250	350	500
Point Source (mJy, 7-point mode, one repeat ABBA)	7.0	7.0	7.0
Small and Large Map (mJy, 1σ, one repeat A+B scan, nominal speed)	9.0	7.5	10.8
Extragalactic confusion noise (mJy 1σ)	5.8	6.3	6.8

Spectrometer Sensitivities*

Δσ	Wavelengths (μm)	194-313	303-671
0.04 cm^{-1}	Line flux (10^{-17} Wm^{-2}, 5σ, 1h)	1.00-2.15	1.00-2.20
	cont. flux (mJy, 5σ, 1h)	830-1790	830-1830
0.24 cm^{-1}	cont. flux (mJy, 5σ, 1h)	140-300	140-310
0.83 cm^{-1}	cont. flux (mJy, 5σ, 1h)	40-86	40-88

For more information please refer to the Observer's Manual or visit one of these sites: http://herschel.esac.esa.int, http://www.spire.rl.ac.uk, http://www.herschel.caltech.edu

The SPIRE Consortium: SPIRE is being designed and built by a consortium of institutes and university departments from across Europe, Canada and the USA, under the leadership of a Pricipal Investigator (Professor M.J. Griffin) located at the University of Wales, Cardiff. The member institutes are: Astronomy Technology Centre (ATC), Edinburgh; Observatoire de Meudon (DESPA), Paris; CEA, Service des Basses Temperatures (SBT), Grenoble; Goddard Space Flight Center (GSFC), Maryland; Instituto de Astrofisica de Canarias (IAC), Tenerife; Insitut d'Astrophysique Spatiale (IAS), Orsay; Imperial College London; Instituto di Fisica dello Spazio Interplanetario (IFSI), Rome; Jet Propulsion Laboratory (JPL), Pasadena; Laboratoire de Marseille (LAM), Marseille; Mullard Space Science Laboratory (MSSL), Holmbury St. Mary; Padova Observatory, Padova; University of Wales, Cardiff; Rutherford Appleton Laboratory (RAL), Chilton; CEA, Service d'Astrophysique (Sap), Saclay; University of Colorado, University of Lethbridge, Canada; Stockholm Observatory, Sweden

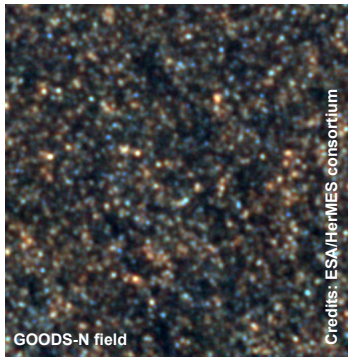
* Quoted figures represent in-orbit results as of May 2010

Version 5, May 2010

SPIRE is one of 3 scientific instruments on board of ESA's Herschel Space Observatory, exploring the Universe at infrared wavelengths between 194 and 671 μm.

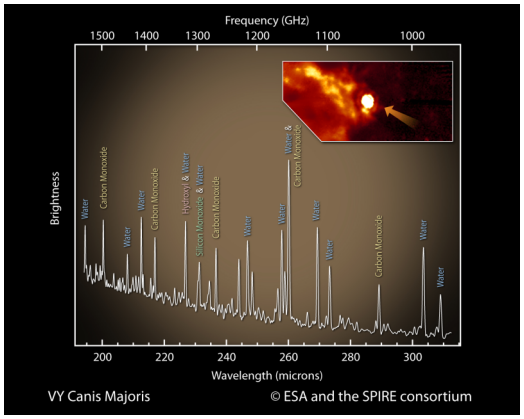
SPIRE
Spectral and Photometric Imaging Receiver

SPIRE is designed to exploit Herschel's capabilities in addressing two of the most prominent questions of modern astrophysics:



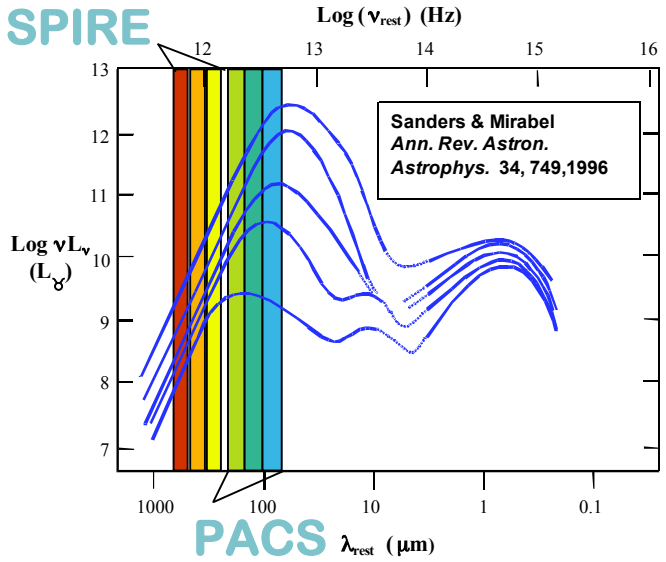
•How and when did galaxies form?
The investigation of the statistics and physics of galaxies and large scale structure formation at high redshift;

•The life cycle of stars
The study of the earliest phases of star formation and the evolutionary life cycle of stars to their end phase.



These investigations require the ability to carry out large area deep photometric imaging surveys at far-infrared and submillimetre wavelengths, and to follow up these observations with spectroscopy of selected sources.

SPIRE exploits the unique advantages of Herschel: its large-aperture, cold, low-emissivity telescope; the complete lack of atmospheric emission giving access to the poorly explored 194-671 μm range, and the large amount of high quality observing time. SPIRE has unmatched sensitivity for deep photometry and moderate-resolution spectroscopy.



SPIRE's photometric bands, together with those of PACS, will cover emission of very cold dust, an interval where many ultraluminous infrared galaxies radiate most of their energy.

Although SPIRE has been optimized for the two main scientific programs, it offers the astronomical community unique observing capabilities to tackle many other astrophysical topics: giant planets, comets, the galactic interstellar medium, nearby galaxies, ultraluminous infrared galaxies, and active galactic nuclei. Its capabilities will remain unchallenged by the ground based and the airborne observatories which are planned to come into operation over the next decade.

For more information please visit one of these sites:
http://herschel.esac.esa.int, http://www.spire.rl.ac.uk, http://www.herschel.caltech.edu