THE HERSCHEL SPACE OBSERVATORY, OPENING THE FAR INFRARED

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The Herschel Space Observatory (Herschel) is a multi user observatory operated by the European Space Agency with a significant NASA contribution. Herschel features a passively cooled 3.5 meter telescope expected to operate near 78 Kelvin and three cryogenic instruments covering the 670 to 57 μm spectral region. The mission life time, determined by the consumption of 2500 liters of liquid helium, is expected to be at least 3.5 years with at least 3 years of operational lifetime in an L2 orbit. The three payload instruments are the Spectral and Photometric Imaging Receiver (SPIRE), Photodetector Array Camera and Spectrometer (PACS), and the Heterodyne Instrument for Far Infrared (HIFI). SPIRE covers 200-670 μm and is a three band bolometer based photometer and a two band imaging Martin-Puplett FTS with a spectral resolution of up to 600. PACS covers 57-200 μm and is a three band bolometer based photometer and a grating slit spectrometer illuminating photoconductor arrays in two bands with a resolution of up to 5000. HIFI covers 480-1272 GHz and 1440-1910 GHz and is a series of seven dual polarization heterodyne receivers with a spectral resolution up to 5×10^6. The observatory performance, selected science program and upcoming opportunities will be discussed.