

## First Herschel results on Mars

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### Abstract

Herschel has observed Mars with its three instruments, the Heterodyne Instrument for the Far Infrared (HIFI), the Photodetector Array Camera & Spectrometer (PACS) and the Spectral and Photometric Imaging Receiver (SPIRE) as part of the HssO Key programme [1]. SPIRE provided for the first time a far infrared spectrum of Mars from 0.45 to 1.55 THz (Figure 1). From these observations water vapour and carbon monoxide mixing ratios of 100 ppm and 900 ppm respectively were derived [2]. Scheduled for early summer 2010, PACS will scan the Mars spectrum in the frequency range from 1.43 to 5.26 THz. On 17 September 2009 PACS already provided data on carbon monoxide and water including its isotopes derived from observations between 1.59 and 1.83 THz and 5.05 and 5.12 THz. HIFI has observed Mars between 11 – 16 April 2010 and performed line scans from band 1a to 6b (for technical reasons excluding band 5b). Furthermore dedicated observations on carbon- and oxygen isotopes in carbon monoxide and oxygen- and hydrogen isotopes in water vapour as well as hydrogen peroxide, hydrogen chloride and molecular oxygen have been executed. These observations contain a wealth of information and the analysis has thus started. In this presentation we will provide an overview about the first Herschel results on Mars.

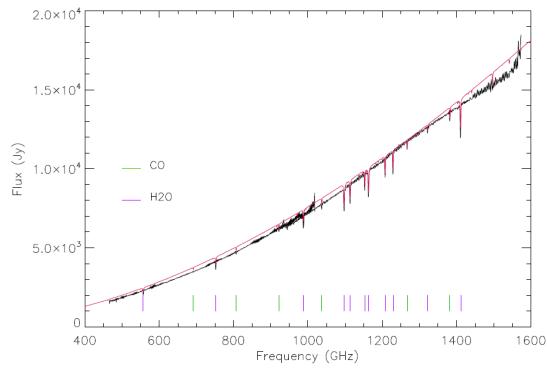


Figure 1: SPIRE spectrum of Mars from 9 Nov. 2009

### References

[1] Hartogh, P., Lellouch, E., Crovisier, J., et al.: Water and related chemistry in the Solar System. A guaranteed time key programme for Herschel, *Planet. Space Sci.*, Vol. 57, 2009  
 [2] Swinyard, B., Hartogh, P., Sidher, S. et al.: The Herschel-SPIRE submillimetre spectrum of Mars, *A&A*, in press.

