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Spectral Scan and Line Catalogue of the Martian Atmosphere from Herschel/HIFI Observations

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Abstract

The Heterodyne Instrument for the Far-Infrared (HIFI) [1] was the very high-resolution spectrometer (resolving power of up to 10^7) on-board the Herschel Space Observatory [2]. It offered a spectral coverage in the ranges [480–1270] and [1430–1910] GHz. Herschel/HIFI has observed the Martian atmosphere in its different seven HIFI mixer bands and using its spectral line and spectral scan observing capabilities, covering from a Martian northern spring to mid -summer, in the framework of the Herschel Solar System Observations (HssO) Key Programme [3].

We have conducted a dedicated work in order to extract, identify and catalogue spectral lines (species and transitions) from these observations. The observations were primary processed with the standard Herschel Interactive Processing Environment (HIPE) modules [4].

The Catalogue is being made available through the Herschel Science Archive (HSA) [1] as an User-Processed Data Product (UPDP)[2], and we provide here further information about the content of this scientific data-set and examples of the observations and data-analysis. This catalogue will facilitate current and future studies of the Martian atmosphere.

Acknowledgments

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References

[1] de Graauw, T., Helmich, F.P., Phillips, T.G. et al. 2010, A&A, 518, L4

[2] Pilbratt, G.L., Riedinger, J.R., Passvogel, T. et al. 2010, A&A, 518, L1

[3] Hartogh, P., Lellouch, E., Crovisier, J. et al. 2009, PSS 57, 1596

[4] Ott, S. 2010, ASP Conference Series, 434, 139

[1] https://www.cosmos.esa.int/web/herschel/home

[2] https://www.cosmos.esa.int/web/herschel/user-provided-data-products