

## *Herschel* SPIRE FTS telescope model correction

Rosalind Hopwood · Trevor Fulton · Edward T. Polehampton ·  
Ivan Valtchanov · Dominique Benielli · Peter Imhof · Tanya Lim ·  
Nanyao Lu · Nicola Marchili · Chris P. Pearson · Bruce M. Swinyard

Received: 30 June 2013 / Accepted: 22 September 2013  
© Springer Science+Business Media Dordrecht 2013

**Abstract** Emission from the *Herschel* telescope is the dominant source of radiation for the majority of SPIRE Fourier transform spectrometer (FTS) observations, despite the exceptionally low emissivity of the primary and secondary mirrors. Accurate modelling and removal of the telescope contribution is, therefore, an important and challenging aspect of FTS calibration and data reduction pipeline. A dust-contaminated telescope model with time invariant mirror emissivity was adopted before the *Herschel* launch. However, measured FTS spectra show a clear evolution of the telescope contribution over the mission and strong need for a correction to the

---

*Herschel* is an ESA space observatory with science instruments provided by European-led Principal Investigator consortia and with important participation from NASA.

---

R. Hopwood (✉)

Imperial College London, Blackett Laboratory, Prince Consort Road, London SW7 2AZ, UK  
e-mail: r.hopwood@imperial.ac.uk

T. Fulton · P. Imhof

Blue Sky Spectroscopy, Lethbridge, AB, T1J0N9, Canada

T. Fulton · E. T. Polehampton · P. Imhof

University of Lethbridge, Lethbridge, AB, T1K3M4, Canada

E. T. Polehampton · T. Lim · C. P. Pearson · B. M. Swinyard

Rutherford Appleton Laboratory, Chilton, Oxfordshire OX11 0QX, UK

I. Valtchanov

ESAC, P.O. Box 78, 28691 Villanueva de la Cañada, Madrid, Spain

D. Benielli

Aix Marseille Université, CNRS, LAM (Laboratoire d'Astrophysique de Marseille) UMR 7326,  
13388 Marseille, France