

Research in Astrophysics from Space (E)
IR session with Focus on Herschel and Planck (E14)

THE HERSCHEL PHOTODETECTOR ARRAY CAMERA & SPECTROMETER (PACS): DESIGN AND IN-FLIGHT OPERATION AND SCIENTIFIC PERFORMANCE

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The Photodetector Array Camera and Spectrometer (PACS) is one of the three science instruments for ESA's far infrared and submillimeter observatory Herschel. It employs two Ge:Ga photoconductor arrays (stressed and unstressed) with 16 × 25 pixels, each, and two filled silicon bolometer arrays with 16 × 32 and 32 × 64 pixels, respectively, to perform imaging line spectroscopy and imaging photometry in the 60 - 210μm wavelength band. In photometry mode, it simultaneously images two bands, 60 - 85μm or 85 - 130μm and 130 - 210μm, over a field of view of 1.75' × 3.5', with full beam sampling in each band. In spectroscopy mode, it images a field

of $47''47''$, resolved into 55 pixels, with an instantaneous spectral coverage of 1500 km/s and a spectral resolution of 175 km/s.

After the launch in May 2009 we have successfully completed the commissioning, calibration and performance verification of the instrument on Herschel in all of its observing modes. We find that the in-orbit performance is close to or even better than predicted from ground tests. We describe the observing modes as offered to the user after in-flight optimization and report the actual performance achieved in each mode with scientific observations.