

# The *Herschel*-PACS photometer calibration

## Point-source flux calibration for scan maps

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**Abstract** This paper provides an overview of the PACS photometer flux calibration concept, in particular for the principal observation mode, the scan map. The absolute flux calibration is tied to the photospheric models of five fiducial stellar standards ( $\alpha$  Boo,  $\alpha$  Cet,  $\alpha$  Tau,  $\beta$  And,  $\gamma$  Dra). The data processing steps to arrive at a consistent and homogeneous calibration are outlined. In the current state the relative photometric accuracy is  $\sim 2\%$  in all bands. Starting from the present calibration status, the characterization and correction for instrumental effects affecting the relative calibration accuracy is described and an outlook for the final achievable calibration numbers is given. After including all the correction for the instrumental effects, the relative photometric calibration accuracy (repeatability) will be as good as  $0.5\%$  in the blue and green band and  $2\%$  in the red band. This excellent calibration starts to reveal possible inconsistencies between the models of the K-type and the M-type stellar calibrators. The absolute calibration accuracy is therefore mainly limited by the  $5\%$  uncertainty of the celestial standard models in all three bands. The PACS bolometer response was extremely stable over the entire *Herschel* mission and a single, time-independent response calibration file is sufficient for the processing and calibration of the science observations. The dedicated measurements of the internal calibration

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