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Description of the dataset of System 2 “PSR006”, resulting from the characterization using the ATLAS facility

1 Introduction

The following report briefly describes the measurements resulting from the characterization of the Precision Solar Spectroradiometer PSR006, using the tuneable laser facility ATLAS.

2 Measurement setup

The system was installed in the optical laboratory of PMOD/WRC, on the ATLAS facility. Measurements were performed over the wavelength range 300 nm to 1020 nm, which is the operating range of the PSR system. The two main objectives of the measurements were the characterization of the linearity and the line spread functions. The measurements took place during the period 6 June to 13 June 2016, resulting in a combined dataset of 86 MB, archived on the main server of PMOD/WRC, under:

\\ad.pmodwrc.ch\Institute\Projects\ATLAS\Atlas\Data\PSR_006.

The measurements were performed according to the standard operating procedures ATLAS_SOP_linearity and ATLAS_SOP_LSF.

3 Linearity Characterisation

The measurements of the linearity were performed by varying the intensity of the laser output beam, as well as by changing the integration times. A sample of the measurements is shown below:

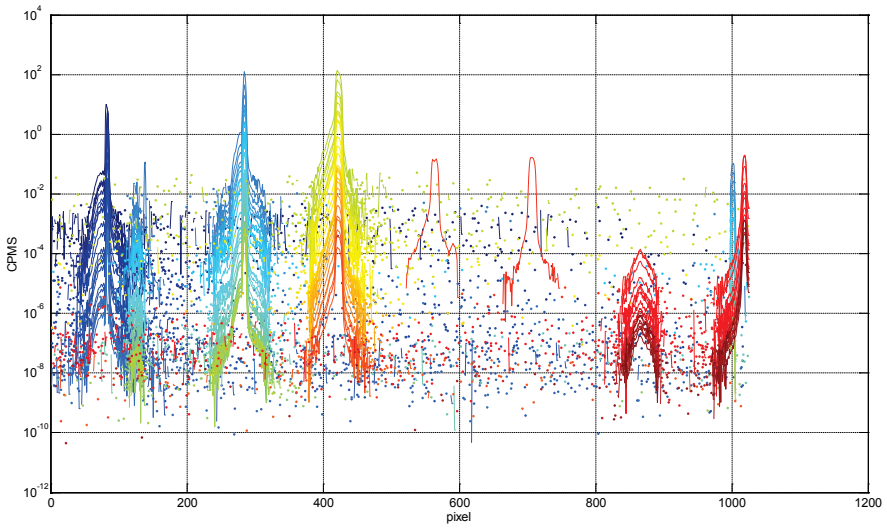

Figure 1 118 measurements for different intensities and different integration times

4 LSF Characterisation

The measurements of the line spread functions were performed by combining measurements at different saturation levels with an unsaturated measurement in order to achieve a dynamic range of the line spread function of at least 10^{-5}. The resulting line-spread functions are shown in the figure below:

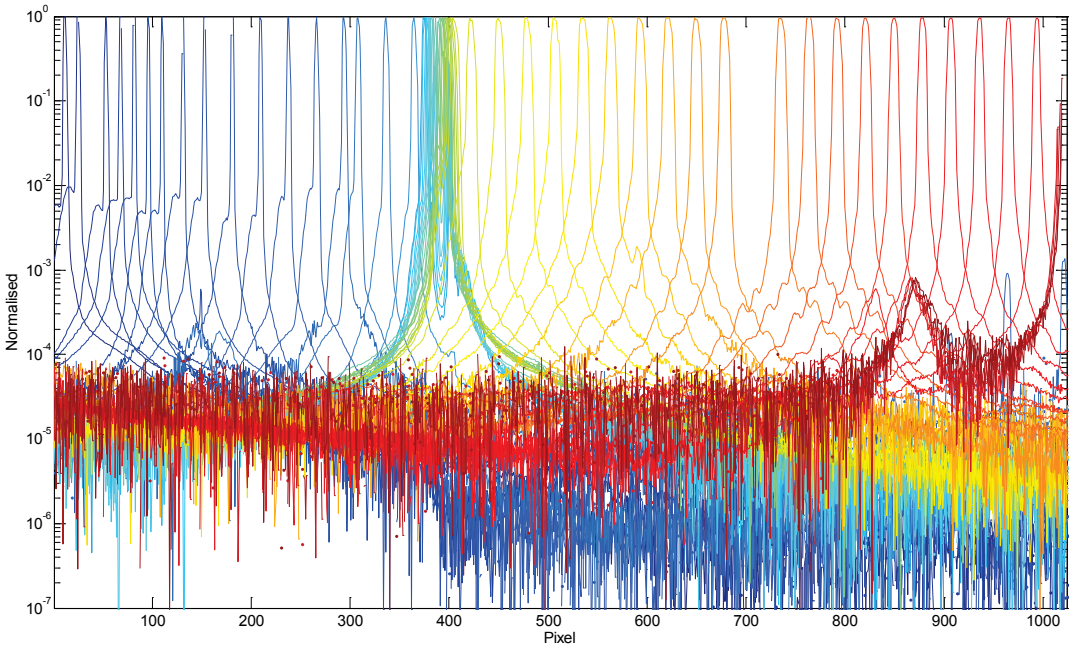

Figure 2 Line spread function measurements of PSR 006 for different wavelengths of the tuneable laser system ATLAS.

The slit functions of these measurements allow determining the full width at half maximum and the slit function shape across the operating range of the spectroradiometer. An example at 308 nm is shown below:

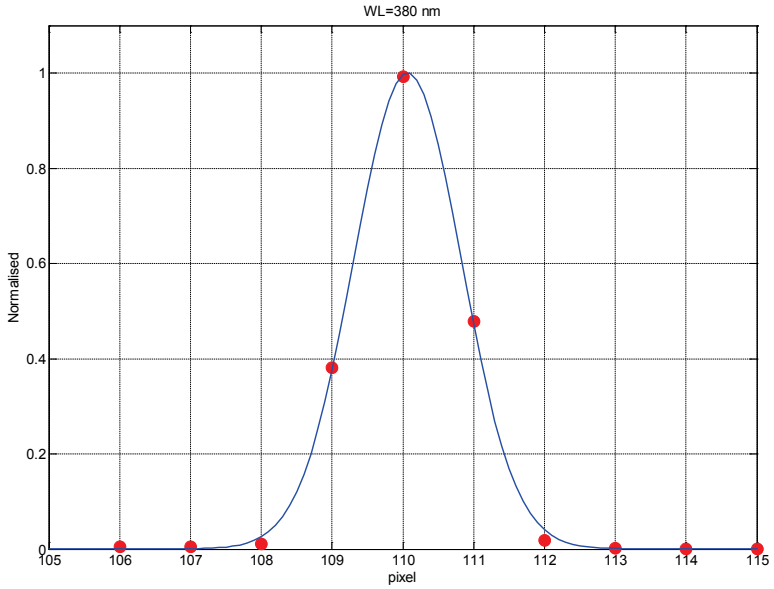

Figure 3 Slit function measured at 380 nm. The measurements are shown as red dots, while a Gaussian fit to the data is shown with the blue curve. The center of the slit function is 110.06 pixel, with a FWHM of 1.8 pixel.

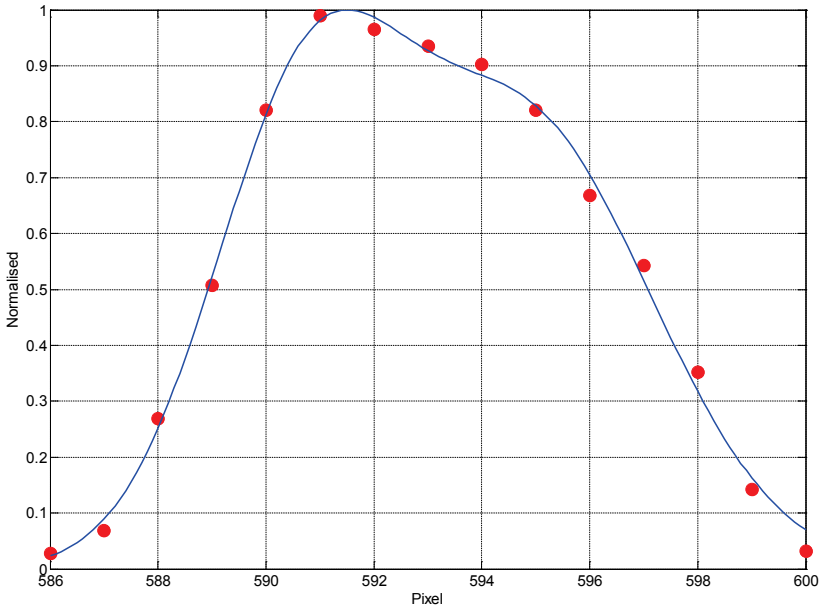

Figure 4 Slit function measured at 720 nm. The measurements are shown as red dots, while a Double-Gaussian fit to the data is shown with the blue curve. The center of the slit function is at 592.8 pixel, with a FWHM of 8.1 pixel.

5 Data archive

The measured data is archived in matlab format on the PMOD/WRC server, at
\\ad.pmodwrc.ch\Institute\Projects\ATLAS\characterisations

The Dokumenten History

Version	Freigabedatum	Freigabe	Änderungen
1.0	13.7.2016	JG	First Version of document