Field of views scans on OD 79

1 Introduction

Observations 1342181235, 1342181236 and 1342181237 on OD 79 are field-of-view scans with the calibration sources switched on. Each observation consists of one “up” and one “down” scans of the chopper along the whole field of view. There are 9 ramps per chopper position and 145 chopper positions per scan. The signal was acquired with 64 readouts per ramp in “average ramps” mode. Observation 1342181235 is band B2A (60 and 120 µm), 1342181236 in band B3A (60 and 180 µm) and 1342181237 in band B2B (75 and 150 µm). During all observations, the grating was fixed at the corresponding key wavelength position.

2 Field of view scans

Figure 1 shows the deglitched signal in the blue and red channels of the 16 pixels of the central module as a function of time, during the field of view scans (up and down). The chopper position “CPR”, scaled to fit in the plot, is shown with a grey dashed line. The observations start with scanning the calibration source CS1, then the telescope background and the calibration source CS2 for the “up” scan and continue the other way round for the “down” scan.

![Figure 1: Deglitched signal of the 16 pixels of the central module during the field of view scans.](image)

In the blue channel, the signal pattern is rather symmetrical with respect to the chopper movement. On the other side, the signal is saturated at 120 µm (almost no difference between the 16 pixels) and we clearly see at 180 µm that there is a time constant effect: the signal evolution does not reflect the chopper movement, this is particularly visible for CS2 at the center of the plot.

Whereas it looks possible to assess the flatness of the illumination from the calibration sources in the blue channel, it only seems feasible at 150 µm in the red.
3 How flat is the illumination from the calibration sources?

To study in more details the illumination from the calibration sources, I have first selected the ramps illuminated by CS1 (CPR \(< -17000\)) and the ones by CS2 (CPR \(> 17000\)). Then, for each calibration source separately, I have computed for each chopper plateau a mean signal over the 9 ramps and over the 16 pixels of the central module. Figure 2 shows this mean signal, normalized to its mean, for each calibration source. At 150 \(\mu\)m, the illumination from CS1 looks rather different from the one from CS2, which seems particularly flat, although the signal is probably affected by the time constant effect.

As we can see, the deviation from a perfectly flat illumination does not exceed a few percents.

Figure 2: Mean signal, normalized to its mean, of the 16 pixels of the central module as a function of the chopper position.

Finally, figures 3–6 present the illumination from the calibration sources as seen by each module individually. Although there are differences between spaxels, the deviation from a flat illumination does not exceed a few percents for a given spaxel.
Figure 3: Same as Fig. 2 for all modules in band B2A at 60 µm.
Figure 4: Same as Fig. 3 in band B3A at 60 µm.
Figure 5: Same as Fig. 3 in band B2B at 75 µm.
Figure 6: Same as Fig. 3 in band R1 at 150 µm.