
Tigre newsletter

No. 2

23.06.2015

The start of the observations of the observing period AO2 is approaching and it is a good idea to send you the second TIGRE newsletter with some news that we hope you find helpful. We first talk about the recent actions taken on the spectrograph. Then, we describe the new features of the robotic operation of the telescope (and how you can request then in the archive webpage). Finally, some results about the FLI CCD that was installed in the red arm of HEROS between December and May are presented.

Spectrograph

As you know, the original Andor CCD for the red channel of HEROS could not cool the chip as expected (a problem in the electronic of the cooling was found). Therefore, the CCD was sent for repair in December last year. We received back the repaired camera in March and it was again installed in the red arm of HEROS during the last service trip to Guanajuato in mid May.

At the same time the cross-disperser of the blue channel of HEROS was changed. The surface of the old one looked milky and we expect an improvement in the efficiency of the blue channel of the spectrograph with the new one.

We also tried to minimize the gap between both channels of the HEROS and after the adjustment of the spectrograph the final ranges in wavelength are:

-Blue channel 3738Å - 5748Å

-Red channel 5767Å - 8779Å

You can find this information, as well as the wavelength ranges of each order, in the webpage of TIGRE (under "Spectrograph info" in the TIGRE users pages). Also there you can find an atlas of the ThAr spectrum, including the wavelengths of the lines used as reference for the wavelength solution.

The reduction pipeline works again automatically after a new wavelength solution was calculated for the new adjustment of HEROS and the archive is updated.

In the next days we will analyze the data taken after the service trip and make the necessary corrections in the Signal to Noise Calculator. Also, we will determine the improvement achieved in the blue channel, after the change of the cross-disperser.

Robotic operation / Archive

As requested by several users, in the new season it will be possible to observe targets that are not the brightest in the field of view of the guiding camera ($\sim 2.5' \times 2.5'$). If this is the case for one of your target, please click on the button "is NOT the brightest in the field". Otherwise, it is possible that the target acquired is not yours, but the brightest seen by the guiding camera.

In the special case you have a very red target, you can request for different exposure times in the blue and the red channel of the spectrograph. In this way, you can avoid saturation in the spectrum of the red channel, while having a good exposed spectrum in the blue

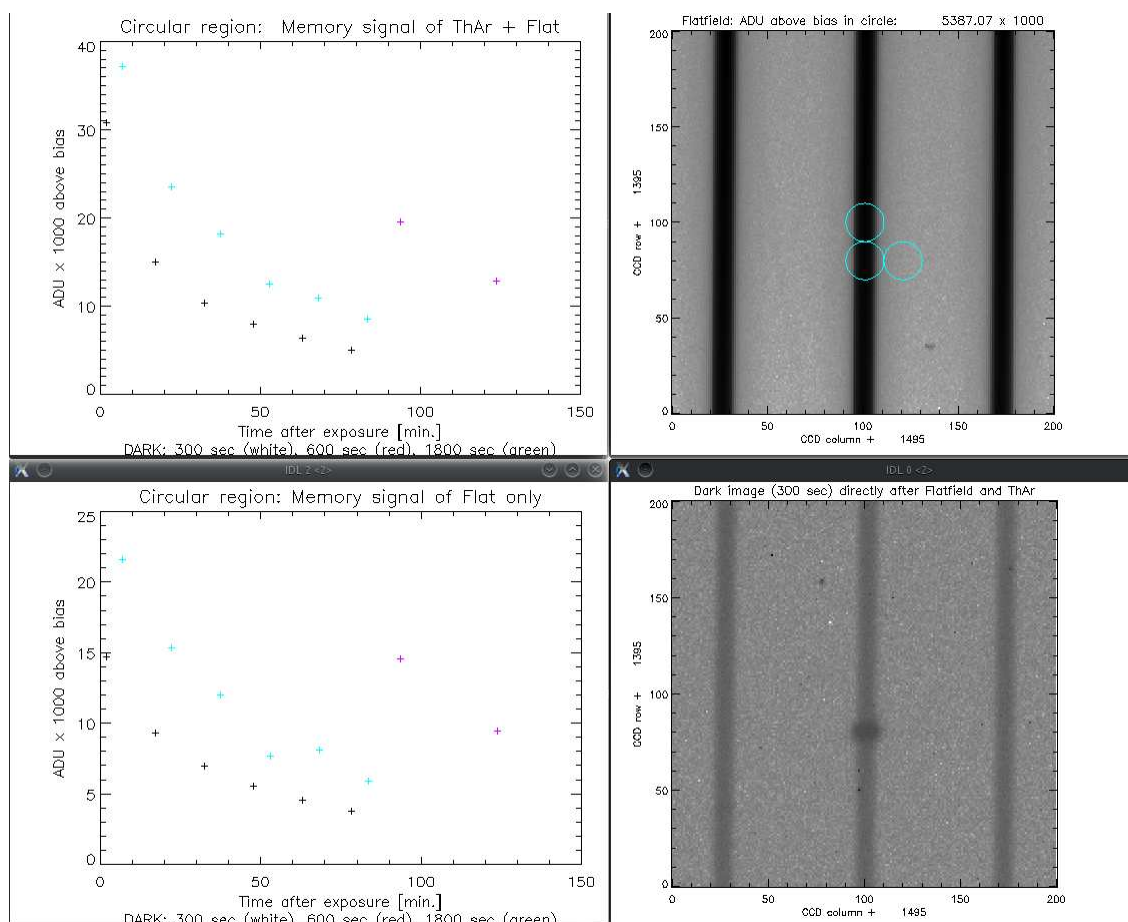


Figure 1: Results of the measurements of the memory effect in the FLI CCD. See the text for details.

channel. Please note that the number of exposures will be the same for both channels. If you want this option, simply write both exposure times (in seconds) separated by a comma (*expB,expR*). Please justify why you request this option.

ToO proposals can have now more than one target. If you need it, click on ToO if the section of the observing strategy of the pages of the target. ToOs are specially considered by the scheduler and the observations will be obtained if they are possible. Please, justify in the comments or in the scientific justification why this is a ToO.

FLI CCD

While the Andor camera of the red channel was under repair, we were using another the CCD, the FLI ProLine PL09000. This camera suffered from what we call "Memory Effect" usually called elsewhere as "Residual Bulk Image" (see for example:

http://www.narrowbandimaging.com/residual_bulk_image_ccd_orig_page.htm). We have taken some measurements and U. Wolter has analyzed it and found the following:

Figure 1 shows the temporal evolution of the signal we find in a series of dark frames of HEROS using the FLI-camera. This signal is caused by a memory effect of the CCD. This memory effect affects all red-arm exposures of HEROS taken with the FLI ProLine PL09000 camera which was in operation between 6 December 2014 and 15 May 2015.

What we learn:

- For a 600 sec exposure the memory signal is approximately 0.5% of the signal of the directly preceding frame. E.g. 10000 counts per spectral bin in the preceding frame lead to about 50 "parasitic" counts per bin in a subsequent 10 min. exposure caused by the memory effect.
- The proportionality of this memory effect to the signal of the preceding frame has not been rigorously checked, but seems to be approximately valid.
- The memory signal is approximately proportional to exposure time.
- The memory signal decays roughly exponentially with a half-life of about 30 min.

Best regards,
The TIGRE Team