AMBER

Memo Number: ???

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Subject : **Commissioning of recent changes in AMBER templates**

Presents :

1 – Continuous sequencer mode (PPRS-032120)

This detector mode is now a standard. I was turned on during my all turno (it is so great).

Data quality and operations
Data can be reduced without any problems. Data do not contain void frames anymore. First frames are exempt of the fast changing bias seen after a restart of the sequencer. Therefore **this mode answers the main points without creating new**. I had no problems in operation.

Handling the NDITSKIP
NDITSKIP files are skipped after a restart of the sequencer. However they are not skipped for each exposure. This is exactly the functionality that is needed: each time the sequencer is touched, bad frames are created by they are also skipped. And we don't skip good frames ad the beginning of each exposure. Therefore so we can put safe margin in NDITSKIP. At least, **we don't have to worry about reducing the current NDITSKIP**.

New formula for the exposure time
With the "continuous mode", the exposure time is different than previously because: *1)* frames are not skipped at the beginning of the exposure (exposure is shorter), but *2)* the on-going frames is not stopped when starting an exposure, the system just wait for it to end (exposure is longer). I took data to check the exposure time. Old formula was:

$$(NDIT + NDITSKIP) \times (DIT + minDIT)$$

New formula is (determined with data shown in appendix):

$$(NDIT + a) \times (DIT + minDIT)$$

where $a = 1$ for a slight overestimation of the exposure time, $a = 0$ for a slight underestimation, and $a = 0.5$ for a estimation valid in averaged. In total, this is a clear gain compare to the previous situation.

2 – Not restarting sequencer when doing DET1.BCKG=T/F (PPRS-033473)

The purpose of this change is to avoid restarting the sequencer when telling to the realtime computer that we are not (or not anymore) taking a DARK image. This was implemented in `amdiracq 2.4.1.2` (I had to install it, it was 2.5). I used for operations uring days without problems.

- The sequencer is indeed not restarted when doing BCKG=F/T (therefore avoiding bad frames, and/or time losses because of frame skipping).
- The dark looks OK for the real-time computation, at least I could not see any difference in the fringe SNR.
- I could reduce the data with classical pipeline without any problems.

So can be merged into the main trunk.

3 – Grouping the SETUP in the templates (PPRS-032122)

I use the new version of the template without any problems. The template are clearly faster and stress less the instrument. This is OK. As a matter of fact, we save about 5s between each exposure, which corresponds to more than 30s for an OB. However, **the chromatic OPD is NOT properly updated at each "expose" command**, while it should be. The OPD is somehow "touched" at each expose since the piezo clearly receive a setup (they slightly move), however the setup is not done correctly: the DLs position should be read at the full computation of the chromatic OPD should be done.

What's next ??
Here are the additional changes I asked for. They are related to the new, continuous readout of the detector:

- At the end of the DARK, the DET1.BCKG F should be done *before* the opening of the shutter, in order to avoid taking frames, so preferably in a different setup.
- The "coherencing" exposures should always use the same DIT and windowing as the science frames, to avoid restarting the detector. The DIT/NDIT and other detector related parameter should not be asked to the users. (Ideally, these coherencing exposures should disappear in the future, replaced by a better way of centering the fringes in pseudo real-time.)

A – Exposure time

- 100 x 0.025, s3 = 5s, with minDIT=0.025
- 500 x 0.025, s3 = 26s, with minDIT=0.025
- 1000 x 0.025, s3 = 52s, with minDIT=0.025
- 100 x 0.05, s3 = 7s, with minDIT=0.025
- 500 x 0.05, s3 = 38s, with minDIT=0.025
- 1000 x 0.05, s3 = 77s, with minDIT=0.025
- 2000 x 0.05, s3 = 146+8s, with minDIT=0.025
- 100 x 0.2, s3 = 22s, with minDIT=0.025
- 50 x 0.2, s3 = 11s, with minDIT=0.025
- 200 x 0.2, s3 = 45s, with minDIT=0.025
- 10 x 1, s3 = 10s, with minDIT=0.025
- 20 x 1, s3 = 20s, with minDIT=0.025
- 500 x 0.025, s3 = 17s, with minDIT=0.01
- 50 x 0.187, s3 = 19s, with minDIT=0.187
- 30 x 0.561, s3 = 21s, with minDIT=0.187

Their is no more skipped frames at the begining of the exposure. The detecteur now wait for the currently running frame to end up. Formula was: (NDIT+NDITSKIP)*(DIT+minDIT). Formula is: (NDIT+a)*(DIT+minDIT) with a=0 gives a lower limit, a=1 gives an upper limit