2023-04-10 Fred, Denis, Norm

All scopes except W1 are ready.

- UT2h30 arrival in the lab. Start with STS. Alignment of MIRCx with picogtk MIRCX_PICO and select SPECTRO_XY. Up and Dow to align the photometric channels (sum rows in photometric channels) then PS1D (flux 1000) and Right Left for aligning the frequency 16
- Start recording, BIAS, DISP, KAPP, STS6T
- Then work with Norm and Narsi to turn off the MYSTIC pumping system.
- New STS6T recording for comparison.
- Cryopump started again and new STS6T recording for comparison.
- New sequence on STS
    - STS B2B3 fringes not very good
    - DLserver off no changes
    - DL hardware off no changes
    - Iptt server off no changes
    - FTT hardware off no changes
    - PUP server off no changes
    - PUP hardware off no changes
    - PDC server off no changes
    - PDC hardware off no changes
    - SHUT server off no changes
    - SHUT hardware off no changes
    - ADC server off no changes
    - ADC hardware off no changes
- -0.852/-1.459/1.561/0.170 for mircx
- -0.900/-1.516/1.461/0.053
- 0vldc B4B5 3.5/6.2
- Vldc B4B5 6.0/8.7
- Airpath S1/B5=-9.2 S2/B4=-11.15
- S1/B5 4.26 ldc 0.72 vldc
- S2/B4 4.46 ldc 0.19 vldc
- Dloff -310/-380 ➔ positif in spica
- Attempts to understand the alignment issues. In fact when correcting the image and pupil when going from STS to sky, it means that we are always off on the labao systems. Thus the image quality is poor.
- So we start by realigning images and pupils on the STS. Then we go on sky and recenter the pupil image on the STS reference.
- The same procedure as the one that was used for IR should be used also for spica. It is possible to shift the spica pupil by the second step of alignment with the beacon. The star image has been shifted but it is easy to realign it on SPICA (and then also the pupil to compensate the image motion with the IMG mirror).
- Same procedure applied on B4/S2
- Then same on B6/E2 and B1/E1 but for these ones the motion is limited as the beacon starts to go out from the hole and generate internal reflections. Norm is trying to adjust M7 instead through the direction but this is maybe not the good solution

- This star is not very high so we move to another alignment target HD139006
- Norm did the normal beacon alignment on this new star. Stars are very off from the STS position. But pupils are very close which is good.
- Screenshots of the images and of the pupils.
- Now Norm is manually moving the M7 of S1 to the right to try to readjust the centering of the visible spots on the LABAO. But then S1 pupils is vignetted but it does not change the position.
- New alignment of STS and then situation on sky (screenshot #3)
- E2 image quality is on box5, Norm moves the beacon flat and then the M7 to center the images on the STS position. This has not change the pupil position in SPICA so it means that the pupil is still well centered on LABAO. Screenshot #4 done on this position of the pupil.
- Red beacon is closer to Box5… screenshot#5 Maybe refraction between starlight and beacon.
- We do the same adjustment on S1/B5 to check. Image well centered and pupil at the same place than on STS. Check the red beacon. It is also shifted on the left, a little bit less than for E2. Screenshot#6. But beacon is now in the middle in terms of up and down whereas it was at the bottom for E2
- Now the same for S2 on B4. But At the end we decided to not move the flat+M7 but just the spica feeding optics and the beacon is at the center.
- Two screenshots of the beacon spectrum of B4 + SPICA record of the red beacon.
- SPICA recording of B4B5B6 in this situation of alignment.
- Realignment of the three beams, check on the beacon
- New recording with SPICA after this alignment. AO on E2 is really impressive, a very good spot well centered
- Record of the three beacons. S2 is a little bit away, then S1 and E2 is very close to the center. This is equivalent to the improvement of performance of the AO loop.
- Screenshot 02-10-19 after the realignment of S2. Dichroics alignment is maybe not very well done on S2 at that time.
- Standard alignment is ok for SPICA but this could degrade the injection into MIRCx. But if we improve the IR alignment it will degrade the visible alignment.
- UT 9h40: we move to HD160762.
- -1.078/-1.623/1.089/-0.236
- UT10h05
    - B4B5 found for 14447/14718
    - B1B6 found for 10320/17187
- UT10h13
    - DL6 17243
- UT10h18
    - B2B4 found with DL2=15875 but high dispersion
    - DL6 17283
    - DL5 14726
- After a REFVLDC new situation with no dispersion on B2B4 and position as yesterday…
    - DL2 15171
    - DL4 14447
    - DL5 14814
    - DL6 17283
- UT10h40
    - -1.156/-1.800/0.914/-.0531
    - 15171/14447/14814/17283

    - No dispersion and no drift for the moment
- UT11h10 realignement
    - -1.236/-1.942/0.858/-0.694
    - 245: 15171/1447/14694
- We scan E1E2 with respect to the other. Already done +512 and -1024
- Now +1024+512v, sot we restart at -1024
- Record SPICA 10 files of 1000 frames with W2S2S1 and E1E2 (4 fringes)
    - 9332/15163/14447/14694/16283 (all excepted B3)
    - VLDC 5.0/2.5/4.8/3.5/6.8/3.9
    - Fringes mircx -1.256/-2.019/0.823/-0.793 (S1S2E1E2)
- UH11h30 slewing to HD184006
- -1.164/-1.610/1.274/-0.002
- We completed the scan from +1024+512 to -1024-512 on DL1+DL6 with respect to the others.
- Maybe we found them
    - 8468/15163/14447/14494/15435 (12456)
    - Record BIAS and Fringe (10 files of 1000 frames), 40ms.
    - It looks like the fringes E2W2 have some dispersion.
- Correction of dispersion and yes we can clearly confirm them.
    - 4.2/2.5/4.8/3.5/6.8/3.1
    - DL 8644/45163/14447/14502/15595
    - Much less dispersion now
    - -1.316/-1.860/0.920/-0.464
- New alignment of all scopes by Norm
    - -1.329/-1.887/0.894/-0.507
    - 8644/15283/14447/14502/15723 but E1E2 fringes are moving
    - Recording the fringes on SPICA 40ms but E1 DL is not following correctly and E1E2 fringes are moving
    - After a moment E1E2 fringes are stable but E2W2 fringes start to drift… Very strange.
    - Clearly the VLDC positions were not calculated by spica_ople. Thus things are drifting obviously. To be checked with Narsi rapidly
- STS check at the end. Fringes B1B2 and B2B3 better than this morning. Very strange.
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