

Winter 2006 Observing Log

6 February, 2006

IBIS relinquished the telescope a little after 1:00pm

Unpacked Harry (Rockwell), Hagrid (Sarnoff), Hogwarts(Pluto) and cables. Everything required had been packed.

New AO feed optics using mirrors are in place for this run.

IBIS setup with dichroic beam splitter for G-band has been retained. Three fold mirrors are needed to feed the HSG. If one mirror is removed IBIS can be used. It will take three mirrors off the slit to feed the UBF with a slit jaw image.

HSG had a 3m fl single lens installed. It was replaced with the 3m triplet.

Set up the Sarnoff camera in the 5250/5247 path. Installed the PBS. Placed a polarizer in front of the slit and visually aligned the half wave retarder for maximum extinction of the unwanted beam. Placed the polarizer in front of the AO and visually beam extinction looked just as good!

7 February, 2006

Heavy clouds.

Problems identified. Modulator seems to blow up after some seconds of stable operation. Many seconds are required to recover servo. I will keep an eye on this.

Cookie hung up a couple of times. Modulator display quit, modulator rotating.

Sarnoff camera runs in triggered in Focus mode, but manual Acquire fails. Demodulation happens immediately. Problem is with local command. On the net it works OK. I may or may not fix this feature.

Rockwell camera would run but not produce images. Tony Spence found an intermittent connection in the power supply to camera cable. He fixed the bad connection but noted the cable was full of cold solder joints and needs to be replaced.

Bert A would not run. To diagnose, we swapped strobe, power, and fiber optics. Fiber optic at computer was poorly seated.

Sarnoff strobe is connected to FOV strobe. Using a 'T' off bert or ernie results in bert or ernie not working.

Previously we learned the Rockwell must have its own strobe cable. Strobe cables will get labeled this run.

Problem remaining is that when all cameras are sent a command, all react immediately except Harry (Rockwell) that waits 30 seconds then goes.

Hogwarts (Pluto) black screened once.

8 February, 2006

Heavy, low, and ominous clouds.

Rockwell slowness was due to incorrect network setup files. It now responds punctually.

Cookie suddenly crashed early. Cookie was set up to run the modulator at 20Hz on startup. This does not work as the ASP cameras must start at 60Hz, then be slowed down. The settings file was fixed. No more crashes with tests run all day.

Hogwarts (Pluto) is not running fast enough to keep up. It also has black screened three times in the AM. I will concentrate on Sarnoff and Rockwell instead.

Ran a 240 step map. Rockwell was set for 64 accumulations, bert and ernie for 128. Sarnoff for 64 as well. Rockwell worked OK for 116 scans then missed data every eighth thereafter and missed headers every eighth as well but shifted by two scans. Sarnoff dropped about 1 in 10 data files but they were random sometimes in succession. Changed to 128 accumulations. Sarnoff was the same. Rockwell missed only one scan out of 240. Accumulation and sorting overlapped on Rockwell display. Ran again at 64 accumulations on both. Sarnoff missed the same number + or -. Rockwell was perfect. It looks like Rockwell accumulates incorrectly with 128.

Rockwell odd/even fixed pattern is vastly reduced compared to pre-repair images. Also the print through problem is reduced but not yet quantified.

9 February, 2006

Clear!

Rockwell accumulation errors were correct by dropping the number of frames from 128 to 96 when ASP was recording 128. Use of 112 frames did not fix the problem.

Tried lowering priority of cmdin in Sarnoff code. A little better. Checking for accumulation busy did not help. Missing about 1 in 100 instead of 1 in 10.

Set up Sarnoff at 525.0nm/524.7nm. At 20 Hz modulation nd is necessary.

Set up Ernie at 553.7nm. End of sunlight.

10 February, 2006

Partly cloudy.

Versalight spare polarizer was found broken this morning. It had been in its plastic on the optical bench ready for testing of beam balance at all wavelengths.

Setup continued. G-band and UBF were aligned with camera scales covering the ASP image. G-band is via a dichroic beam splitter, UBF takes the slit jaw image.

Sarnoff at 5250/5247 focus completed. ASP cameras for 6302 and 5537 aligned and focused but neutral density filters were changed so focus needs to be re-checked. Rockwell is close but focus needs to be checked.

Sarnoff HA30 + ND 0.5 5250/5247

Bert HA30+ND 0.3 5537

Ernie HA30+ND 0.8 6302

To make Sarnoff data writes reliable, I eliminated scan headers from Sarnoff code. Juan is OK with this change.

I tried the old Pluto netspin code from 4/25/2005. It ran and kept up with the ASP (unlike the new netspin code) but caused computer reboots just like the new code. Something has changed with Hogwarts to cause the reboots.

11 February, 2006

Partly cloudy in the morning, then clear but white sands dust.

Completed focusing of all cameras and covered the spectrograph with dark cloths. Light paths were compartmentalized and a snout placed on the IR camera.

Doug aligned a lamp at prime focus and we ran a lamp flat field sequence. Slit width was 1500 μm .

Accumulations were 16 or 128 frames, except for the Rockwell at 96 in order to complete frame processing in real time. After the lamp flat we did a flat on the Sun with a 50 μm slit width. Phasing was done using a 'Map'. ASP had a hex of 5 and index of 657. Sarnoff hex of 5 as well. Rockwell doesn't matter since it stores all modulation states. We ended the day with a polarization calibration through sand choked skies.

I replaced the Pluto with the BioXight camera even though the Lion interface board is not here. The BioXight works well, up to 63 fps with fast, high gain, External Trigger, channel mode, and X pixels set to 350. I found gains and offsets that work. By the way the Pluto ran this fast with these settings too. The offset is rather high, >10,000, but this was needed to get good signal to noise. Netspin runs with the above settings except External Gate must be specified in the SDK code. The only problem seems to be with the parallel port. Every other scan gets all zeros from the port. I tried inputb, input, and _inpb, all with the same results.

12 February, 2006

Cold strong wind and clouds all day.

I worked on the BioXight. Every other call to the DoGrabImages thread reads all zeros from the parallel port. The other ones are usually good. I tried a direct call to GrabImages instead of the thread and the parallel port problem went away and the code worked every time in manual mode. Network commands did not cause frames to be recorded most of the time. Adjusting priority of cmdin up or down did not help. Documentation says that for routines doing i/o access, _beginthread should be used. This did not help.

Crashes were fewer with a lower priority for the DoGrabImages thread but still happened occasionally.

Given the inability to get reliable data and the occasional crash, I will back up the PixelVision cameras and computer and bring them home.

13 February, 2006

Clearing skies. Turret is iced up on one side so opening has been delayed. Seeing is horrible, scintillation of 2 or more. Practiced with flat field, polcal, stationary slit map, and map with 0.15 arc second steps. Everything seemed to work OK except for the seeing.