

Monthly Status Report
Prime Focus Imaging Spectrograph
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Optics

- Started detailed thermal design of the collimator. It has not proved possible in the current design to passively eliminate collimator defocus simultaneously for the visible and NIR beams, nor to eliminate thermal changes in the collimator focal plane scale. Instead of complicating the collimator to achieve this, the remaining focus and focal plane shifts will be compensated in the camera.
- Contacted 5 opto-mechanical engineers, who are all ready to receive an opto-mechanics RFP.
- Contacted Harold Johnson Optical Laboratory as additional recipient for optics RFP.
- Contacted Cleveland Crystals concerning coatings.

EB visit to HET:

- Spoke with Gary Hill & John Booth concerning alignment, focus, calibration, and opto-mechanical issues.
- Should receive LRS drawings from Gary Hill

Mechanical

- The design of the slitmask was changed significantly to ensure a more reliable operation and simplify the encoding. The solid modelling has been completed and documentation of the mechanism is in progress.
- An adjustable flywheel has been made to test the stepper motor we procured to undertake heat and torque tests (for the waveplate mechanism). Preliminary test have been done to verify the Lab-view interface and a more systematic test will be done this month.
- Investigating air control and using bleed and flow control valves on the pneumatic air line to ensure a constant supply of air to both the pneumatic actuators and for the purging of dust sensitive areas.

MS trip to HET:

- Discussions with John Booth and Gary Hill, and opportunity to see the operation of the telescope on two evenings:
- Gary Hill: how best to use pneumatics on such an instrument, a better understanding of the issues involved in high precision positioning of elements and many new ideas of how to provide accurate motion and limit flexure.
- Seeing the instrument and the tracker system helped to get a better understanding of many of

the design issues specific to prime focus instruments.

Control

- More on prototyping control s/w for mechanisms, specifically the waveplate motion.
- Investigated LabView timing, latencies, and jitter. Learned that LabView does not schedule parallel activities very well on its own.

Management

- Training new management PA, reviewing the project and studying existing schedule and budget.

Detectors (SAAO)

- CCD Controller Software. The CCD controller software design as been progressing well over the last 6 weeks.
 - A model has been defined based on a system developed at ING (Las Palmas), with extensions for frame transfer and driftscan operational modes.
 - DSP Code has been written and debugged for the basic shutter-controlled exposure sequence.
 - Work has started on the frame-transfer mode code.
 - Basic host PC functions for interacting with the controller are being developed simultaneously.
- CCD Mosaicing. Possibilities for establishing a mosaicing facility at SAAO have been investigated. Two possibilities were considered - buying a turnkey system or building up a system from individual components.
 - Turnkey systems are expensive but have the advantage of being available for doing the mosaicing of both Salticam and PFIS, in which case their budgets can share the cost. After considering a number of suppliers, it seems like fully automated non-contact systems might be un-affordable but "manual" systems are still inside budget. Clarity is still being obtained to what exactly a manual system consists of and a more exact cost of an automated system to suit our application.
 - A system built up from individual components will require some development, excluding it from being ready in time for Salticam because of this project's tight schedule, leaving only the money in the PFIS budget for buying the components. Appropriate components had been sourced that should do the job within the PFIS budget share.

Activities for the next month

- Mechanism designs:
 - start focus mechanism
- Optics
 - finish optics thermal design and update the optics design document
 - send out RFP for opto-mechanical consultant.
- Control

- finish design of power and grounding wiring
- Management
 - complete schedule reassessment
 - do quarterly financial review
- Detectors
 - ICD and Statement of Work update

