

## Near Infrared PICNIC Imager (NIPI) - A Progress Report

A. Deep\*, A. N. Ramaprakash, S. N. Tandon, R. Gupta, M. P. Burse,  
P. A. Chordia, H. K. Das, S. Engineer, A. A. Kohok, V. B. Mestry  
*Inter University Centre for Astronomy and Astrophysics, Pune - 411 007*

**Abstract.** In the ASI 2002 meeting we presented a preliminary design of Near Infrared PICNIC Imager (Deep et al, 2002). In this paper we will show the progress that has been made since then.

**Keywords :** PICNIC - near infrared - imager - IUCAA Telescope

### 1. Optical Design, Hardware and Software

The optical design has now been finalised and the orders for all the optical components have been placed with various vendors. The design was modified to loosen the tolerances on lens thicknesses and the separation between the lenses (Fischer et al, 2000), which had the effect that the total track from telescope focus to detector increased to 900mm. The optical design has been folded using three mirrors to reduce the flexure. We have also put aluminium spacers at the appropriate places to account for the effect of lens mounts on the design. The radii of the lenses have been matched with the test plates of International Scientific Products, Optics. Fig. 1 shows the optical layout of the camera.

The entire optics would sit inside a standard size dewar. The filter wheel would be driven by a stepper motor. On the basis of timings of the wheel, the torque required by stepper motor was calculated (Kenjo, 1984) and the correct motor identified. The clock and bias signals for reading out the PICNIC array have been tested on the oscilloscope. We have also made arrangements for testing the PICNIC array inside a dewar and for multiplexer testing at room temperature. The cable for sending the signals from the controller to the array (which sits in a socket on a PCB) has been made and tested.

---

\*e-mail: adeep@iucaa.ernet.in

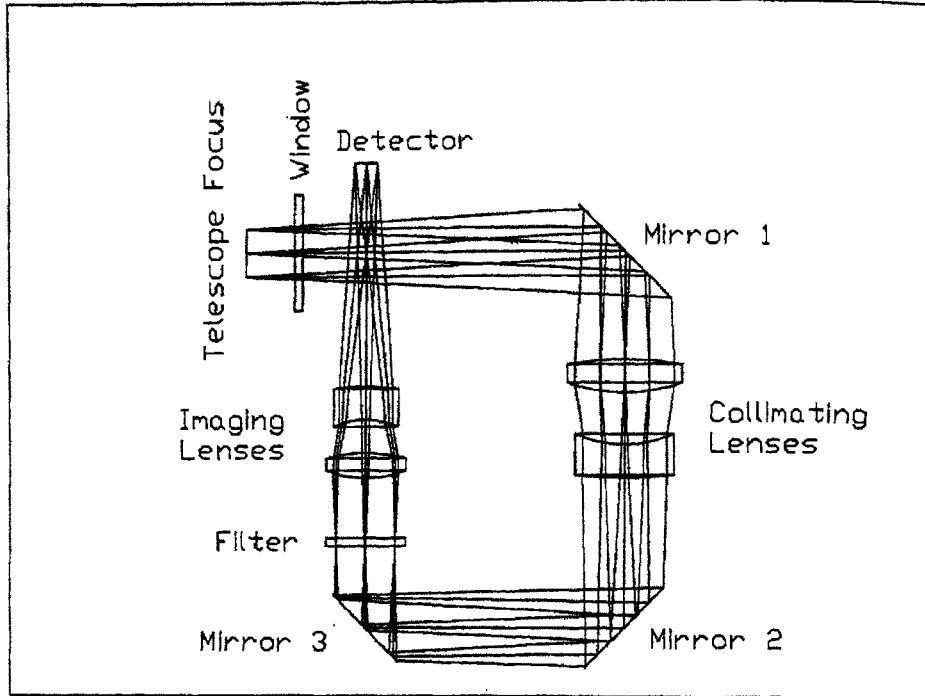


Figure 1. 3-D layout of NIPI.

## 2. Science with NIPI

The camera is equipped with a HgCdTe near infrared PICNIC array. We plan to study the behavior of supernovae 1a near infrared light curves as our first observational project. In this regard, we have estimated the exposure time needed to achieve different values of S/N for 15, 16 and 17 magnitude supernovae. We plan to observe at least 5 supernovae with our instrument and combine them with data sets of other supernovae to calibrate their light curves in J, H and K bands.

## References

- Deep, A. , et al, 2002, *BASI*, 30, 791.  
 Fischer, R. E et al. , 2000, *Optical System Design*, McGraw-Hill Professional  
 Kenjo, T. , 1984, *Stepping motors and their microprocessor controls*, Oxford Science Publications