

Contributed Talk //

Instrumentation



Wian Smit //

University of the Free State (UFS)

Session 4 //

Wednesday, 6 September @ 17:30 SAST

Recently the marked improvement and availability of scientific CMOS (sCMOS) cameras has provided an alternative to more expensive CCD based cameras. A Kepler KL4040 sCMOS was subsequently acquired from Finger Lakes Instruments to replace the current CCD camera used on the UFS Boyden 1.5-m telescope. Because of the differences in technology between CCDs and sCMOS sensors, the sCMOS camera has been characterized and tested. These tests were performed in 2 phases; Phase 1 was in an environment-controlled laboratory and phase 2 in real world conditions with on-sky testing where the camera was mounted to various telescope systems. During phase 1 the BIAS, DARK and FLAT field response were tested and characterized using a AAA standardized light source set to emit a solar spectrum. In addition, the processing and storing of the large 4K image files was studied. During phase 2 the camera was first mounted to a 14" Celestron CGE 1400 system with an Apogee FW50-7S filter wheel with Johnson-Cousins UBVRI filters for the first on-sky and star-light tests. These included absolute photometry of standard fields, planetary observations and limiting magnitudes on Blazars. Thereafter the camera was moved to the Boyden 1.5-m telescope and mounted on the Photometer Instrument pack with a Johnson-Cousins UBVRI filter system. After integration into the 1.5-m telescope systems, additional on-sky tests were performed, including fast photometry of the cataclysmic systems AE Aqr and AR Sco. Results from a photometry pipeline developed to process the sCMOS data will be presented. Lessons learnt and system response will also be discussed. Concluding remarks will include the viability and options when changing from a CCD to a sCMOS based system.

ADDITIONAL AUTHORS

Initials	Surname	Affiliation
B	van Soelen	University of the Free State (UFS)
HJ	van Heerden	University of the Free State (UFS)