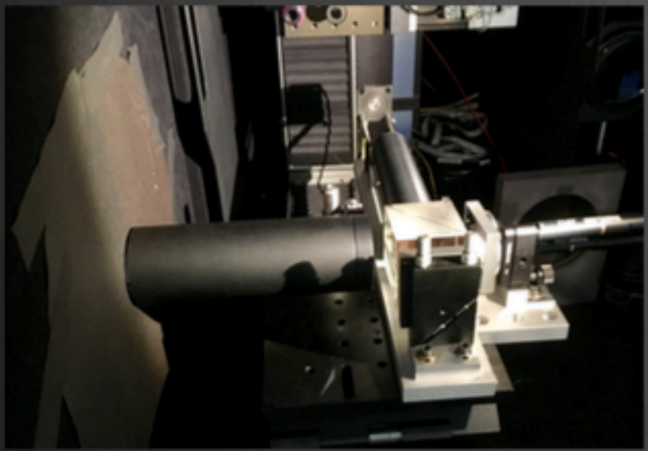
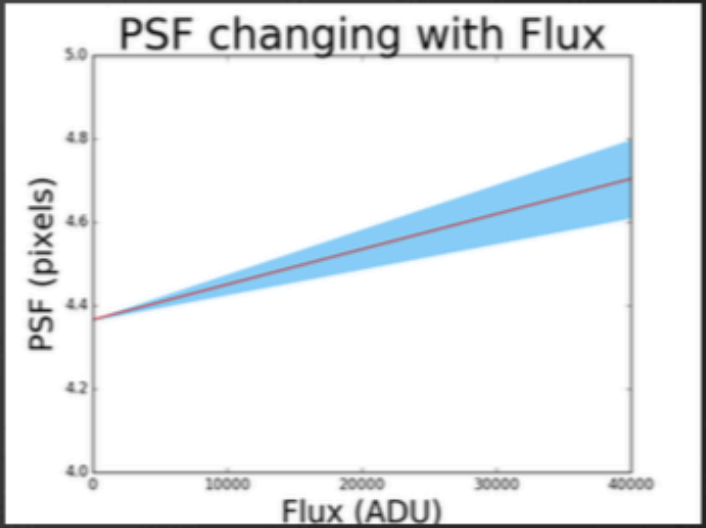
A fringe projector-based study of PSF

Woodrow Gilbertson



- A Michelson Interferometer was used to create a fringe pattern projected onto the CCD
- Comparing the fringes' peaks and trough allows for seeing how PSF changes with flux

- After optimizing the setup, the fringe projector created reliable fringes for study
- Fitting the data with a modified sinusoid allows for measuring the PSF
- The PSF shows a growth with flux, as predicted by the Brighter-Fatter effect

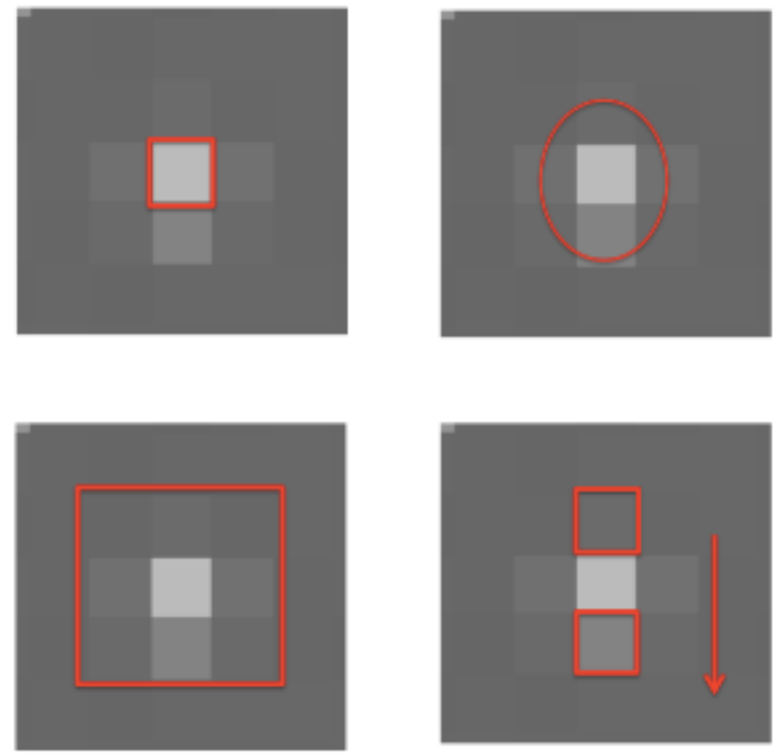


CTE of LSST CCDs with ^{55}Fe x-rays

Daniel Yates

Seeking best measurement technique for determining CTE of CCDs

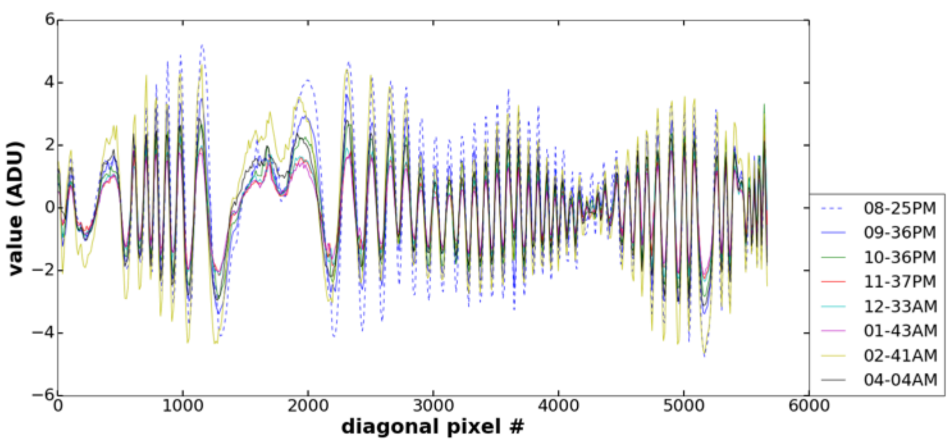
- Analyze changes in ^{55}Fe flux and ellipticity as function of pixel transfers
- Use Monte Carlo simulations to determine optimal CTE measurement technique
- Apply optimal measurement to ^{55}Fe x-ray data to determine CTE

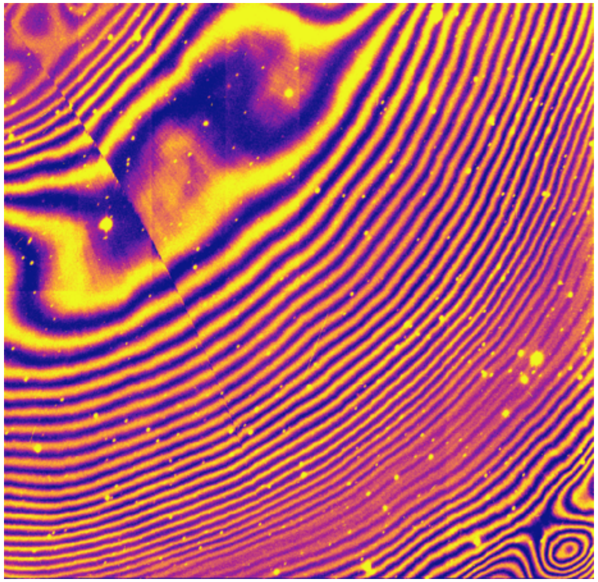


Fringing in MonoCam Y4 Filter Images

Jason Brooks (BNL)

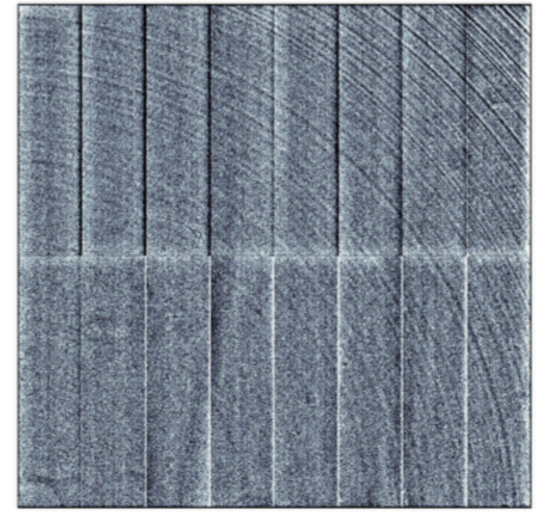
- Studied Fringe patterns observed at 1.3m Telescope at Naval Observatory in Flagstaff, Arizona through Y4 filter
- Patterns occur due to reflection of light inside CCD
- Airglow dominated by OH emission spectra
- OH emission line intensities thought to change overnight, do patterns on MonoCam change as well?
- Short answer: maybe, it is difficult to tell by eye
- Comparison with lab flats shows similar (but not exact) features

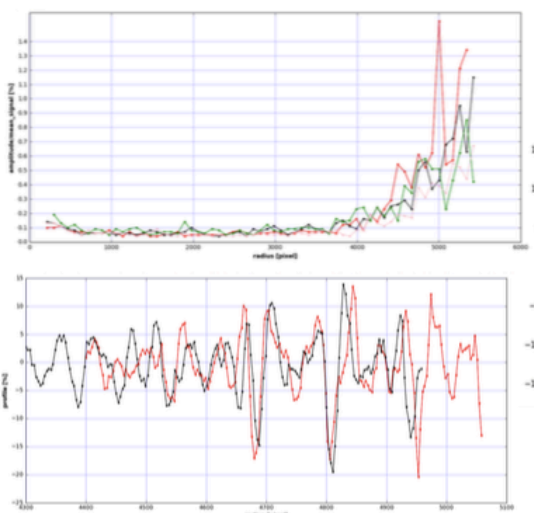




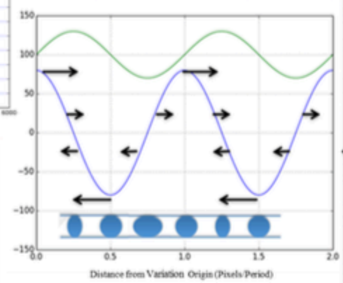
Tree rings in ITL sensors

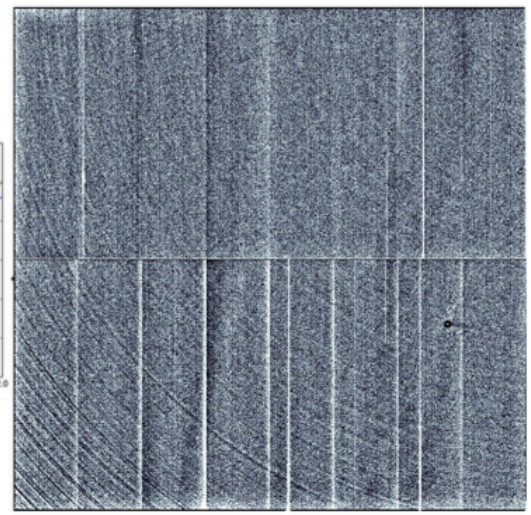
HyeYun Park
Stony Brook University
Brookhaven National Laboratory

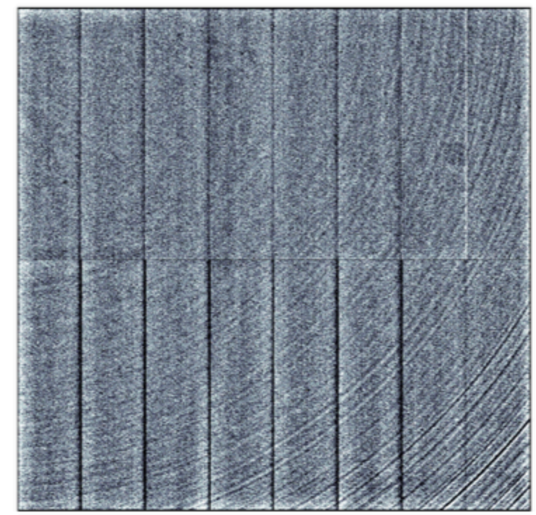




Flux (ADU) vs Radius (pixels)





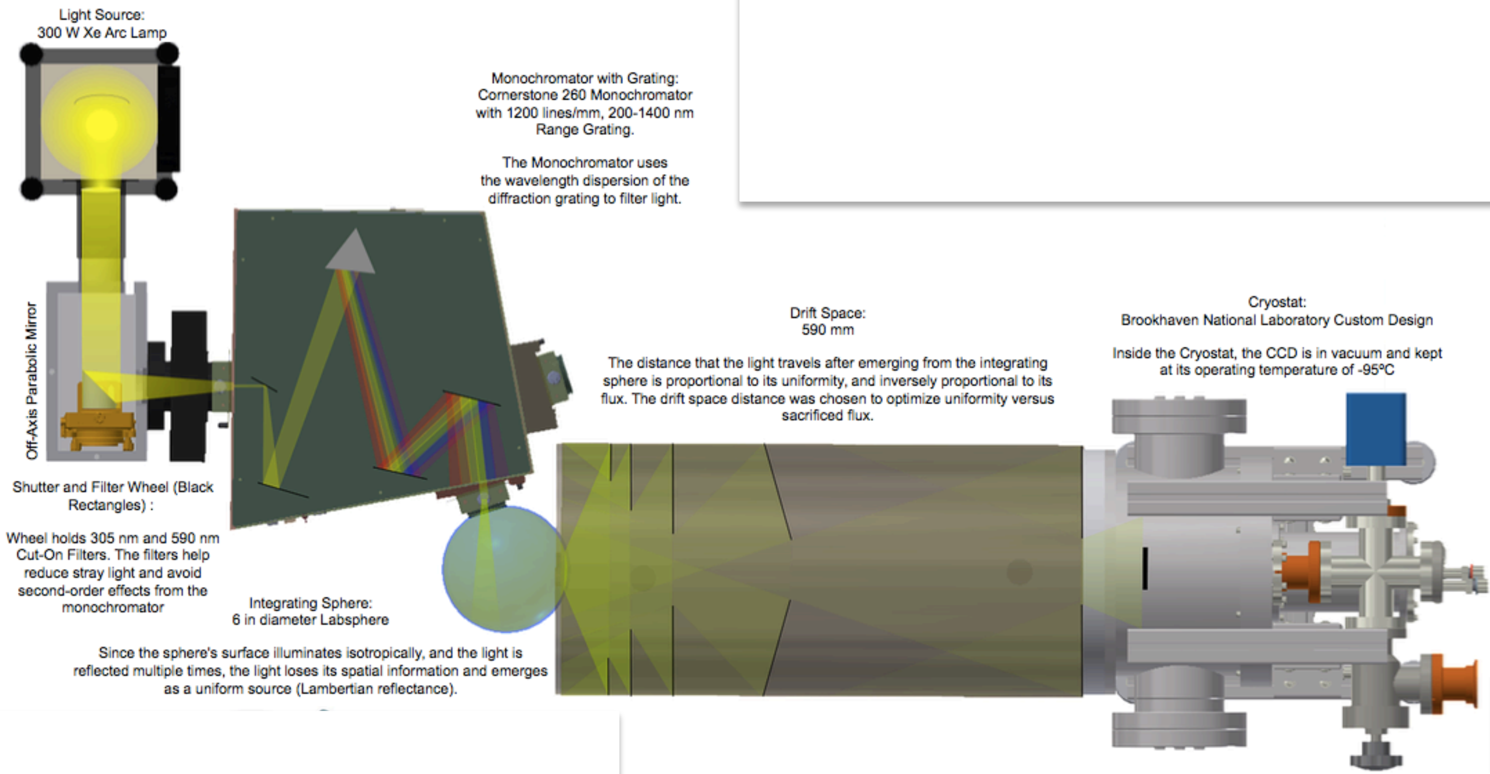


3 CCDs from the same wafer

Variation of resistivity creates transverse electric field in silicon

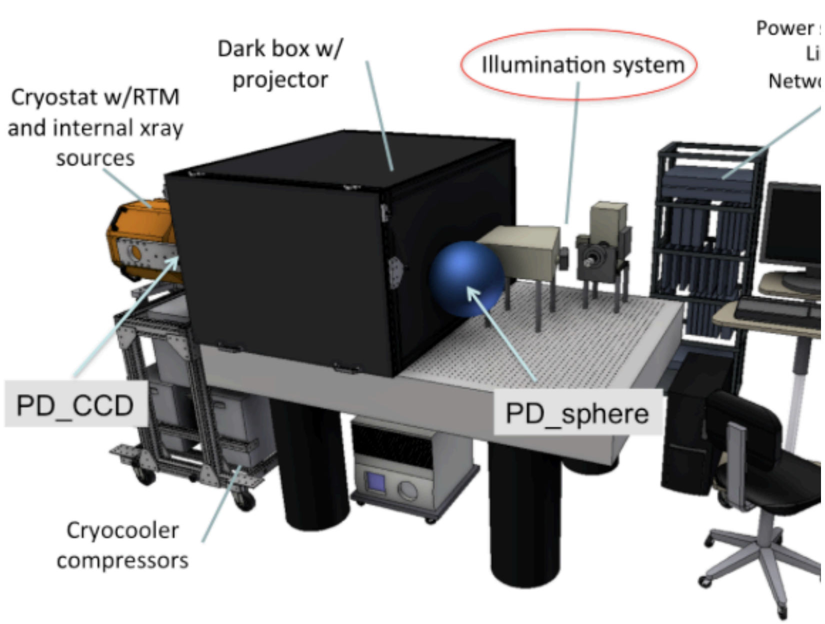
An Automated System to Measure the Quantum Efficiency of CCDs for Astronomy

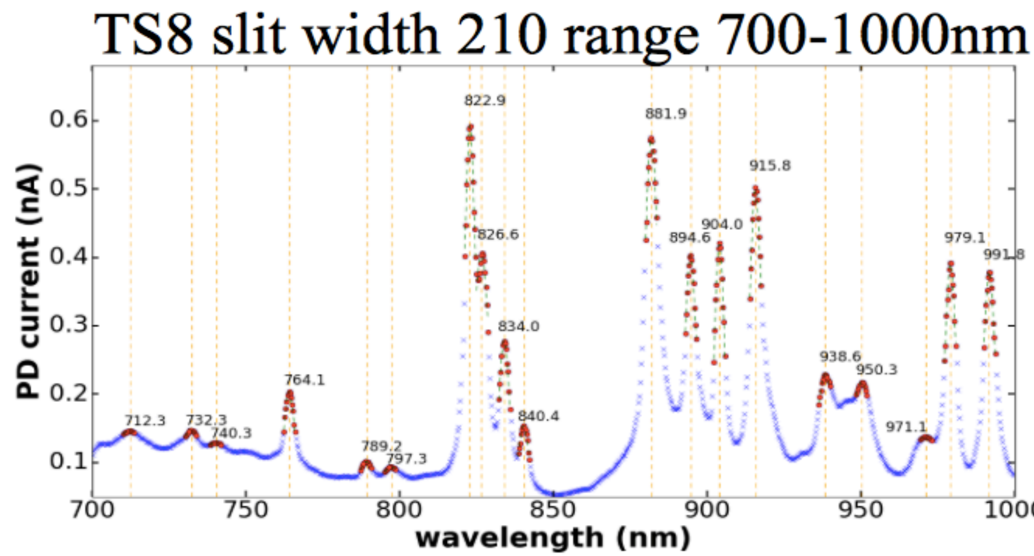
Rebecca Coles(1); James Chiang(3); David Cinabro(2); Justine Haupt(1); Ivan Kotov(1); Homer Neal(3); Andrei Nomerotski(1); Peter Takacs(1)
Institutions: 1. Brookhaven National Laboratory, Upton, NY, United States. 2. Physics, Wayne State University, Detroit, MI, United States. 3. SLAC National Accelerator Laboratory, Menlo Park, CA, United States.

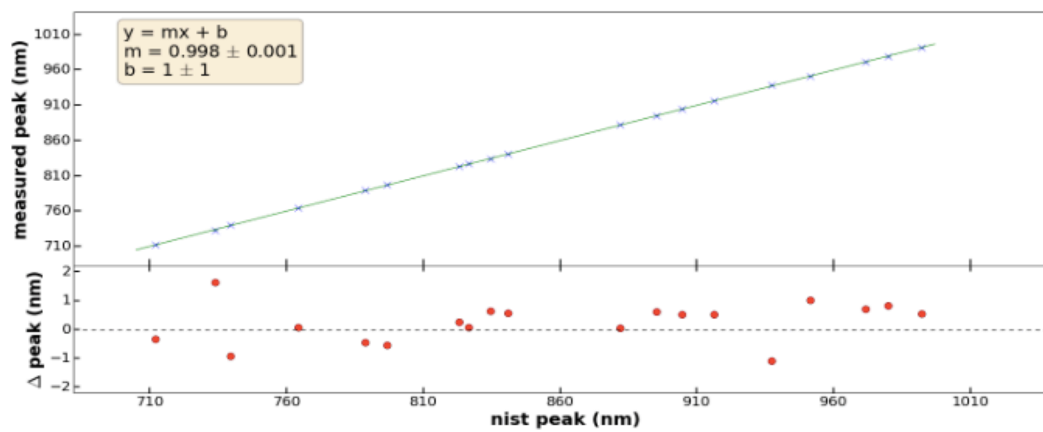


Illumination system for testing of LSST Science Rafts

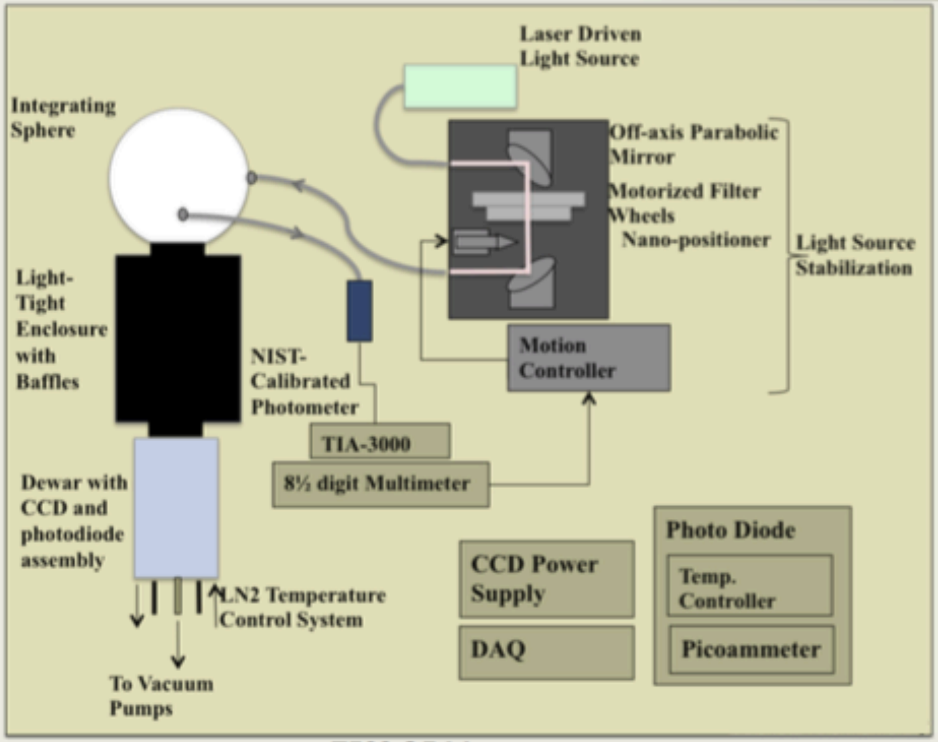
J.Brooks, J.Haupt, H.Neal, A.Nomerotski



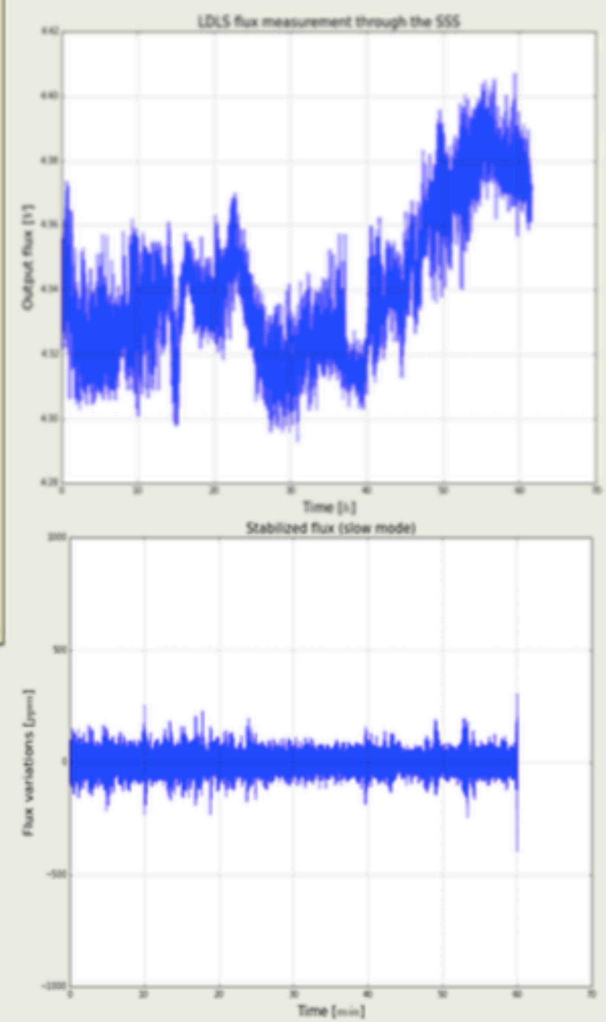


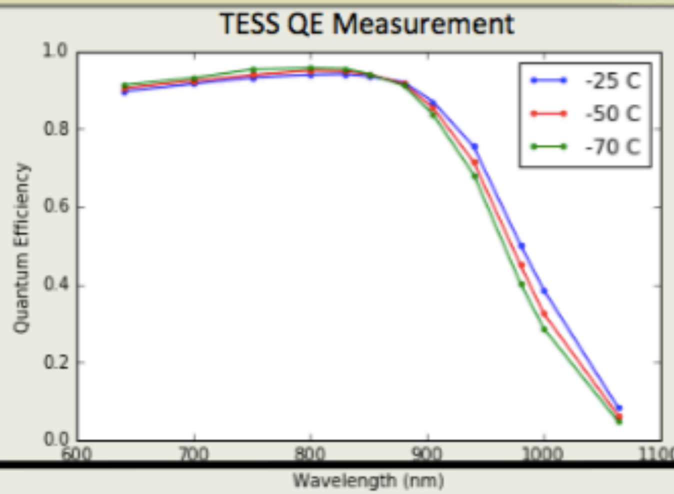


An Optical Test Bench for the Precision Characterization of the TESS CCD Detectors



Light Stabilization





Akshata Krishnamurthy
Massachusetts Institute of Technology

The MOONS Quest for the best Red Sensitive Detector

Olaf Iwert, ESO

MOONS
Multi Object Optical and Near-infrared Spectrograph

Olaf Iwert
European Southern Observatory (ESO)
BNL Workshop 2016

The MOONS red sensitive (fully depleted) detector, illuminated by an F0.95 optics

Olaf Iwert, ESO

>> STILL WELCOME EXPERT ADVICE on our choice in connection with side effects on spectroscopy

Optical Detector Requirements

a.) format of 4k x 4k pixels with 15 µm pixelsize;

b.) illuminated by an F 0.95 camera optics;

c.) flat to less than 10 µm (peak to valley);

d.) highest Q.E. between 0.64 and 0.95 µm

e.) operate at around 133 K to minimize radiation;

f.) have an RON of about 2 e-, preferably even lower;

g.) optimized PSF properties such that charge diffusion is minimized

h.) minimized side effects with respect to conventional detectors

i.) fully integrated into a Schmidt camera optical beam

Olaf Iwert
European Southern Observatory (ESO)

Reach-through Effect in Deep Depletion TESS CCDs

J. Villaseñor, G. Prigozhin, B. Burke, J.P. Doty, S. Yazdi,
G. Ricker, R. Vanderspek

MIT KAVLI INSTITUTE

Observation:

- Full well Capacity increases with increasing substrate voltage

Model:

- Once substrate voltage passes reach-through, channel stop potential shifts
- Inversion potential under the gates shift, decreasing barrier potential minimum, leading to larger full well