

The NOAO/KPNO Mosaic-3 (8K x 8K CCD) Wide Field Imager

Mosaic-3 Quantum Efficiency

The Mosaic-3 detectors have excellent quantum efficiency at red wavelengths (i.e., >85% at 7500-9200 Angstroms). QE curves are shown in Figure 1. Fringing has not been seen with Mosaic-3, even in the z'-band.

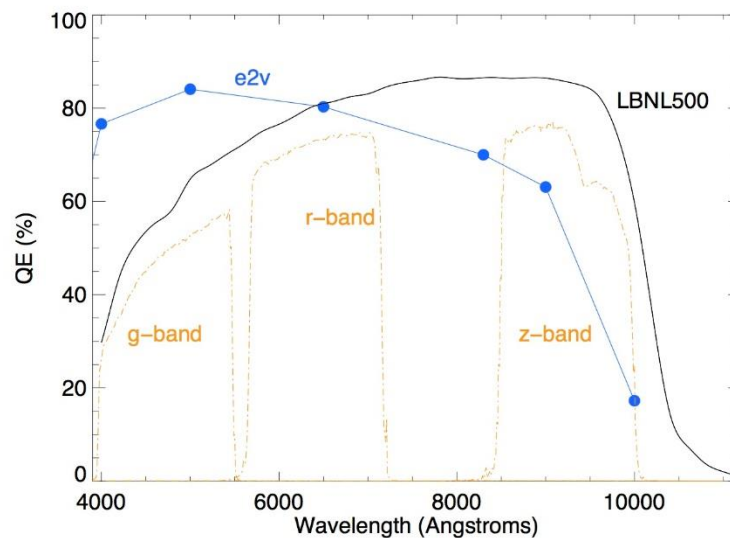


Figure 1: QE of Mosaic-3 (yellow) vs. Mosaic-1.1 (blue).

Detector Characteristics

Arrays	Four 4096x4096 LBNL 500-micron thick, deep-depletion CCDs
Image Size	8448 x 8448 @ 18 bits, plus header, overscan:~285Mbytes
Pixels Size	15 μm (0.26"/pixel at the 4-m)
Read Noise	See Table 2.
DQE	30% @ 400nm, 65% @ 500nm, 80% @ 650nm, 85% @ 900nm, 70% @10000nm (average for eight CCDs, also see Figure 3, Section 2.1)
Dark-current	0.95 e ⁻ /hr (average for sixteen outputs)
CCD Gaps	~200pix in Dec; ~240pix in RA
Filters	5.75" x 5.75"; 57 filters now available at KPNO http://www.noao.edu/kpno/mosaic/filters/filters.html)
Gain	"Normal" and "Low Gain" modes available. See Table 2.
Linearity	Good to 0.5% from the bias level up to approx 30k.
Cosmetics	Excellent; only one bad column

Table 1. *General Mosaic-1.1 Characteristics*

Observing Mode	Normal (fast readout)	Low Gain (slow readout)
Readout Time (including Overhead)	29.7 seconds	37.7 seconds
Gain	1.8 e ⁻ /ADU	2.5 e ⁻ /ADU
Read Noise	8-11 e ⁻	TBD

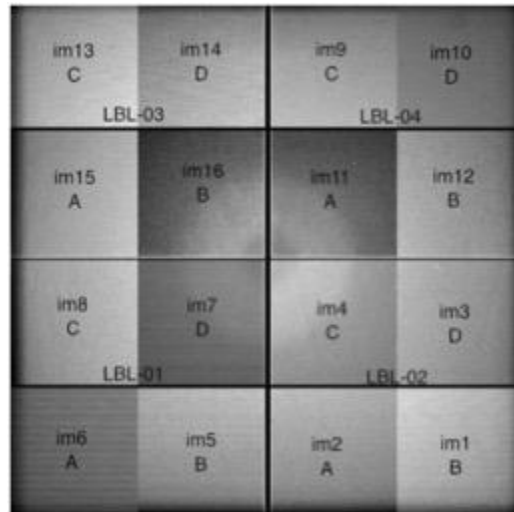
Table 2. *Observing Modes and Mode-Specific Characteristics*

CCD #	CCD Amplifier	FITS Extension	Gain (e⁻/ADU)	Read Noise (e⁻)
2	B	1	1.86	4.44
2	A	2	1.80	5.55
2	D	3	1.82	4.91
2	C	4	1.74	4.85
1	B	5	1.94	4.62
1	A	6	1.67	8.27
1	D	7	1.94	5.02
1	C	8	1.90	4.97
4	C	9	2.01	4.83
4	D	10	1.72	5.96
4	A	11	1.89	5.06
4	B	12	1.86	5.06
3	C	13	1.91	4.11
3	D	14	1.02	5.46
3	A	15	1.90	4.27
3	B	16	1.83	4.03

Table 4. *"Normal" or "fast readout" mode CCD operating characteristics.*

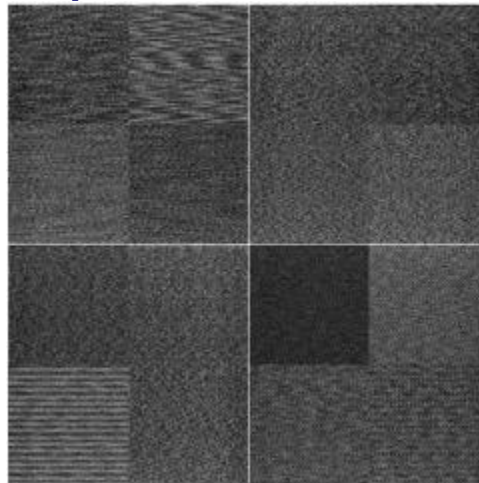
The display orientation of the 16 sections of the Mosaic 1.1 imager at the KPNO 4-meter. The 4 CCDs are divided up into

16 extensions that are labeled in the figure as the numbers im*.



North is to the right and East is at the top

A typical bias exposure. Note the elevated noise in image sections im6 and im14.



Acknowledgements

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