Detectors

- There are four CCDs each with 4032 columns x 4096 rows physical pixels and 20 pixels of overscan for each amp.
- Each CCD is read out from 4 amplifiers located in each corner
- Each single amplifier image extension contains data from one amplifier, so it has 2016+20=2032 columns and 2048 rows
- Current system gain is defined in the image header, and is about 1.5 electrons/DN (Data Numbers)
- Dark current is ~7 electrons/pixel/hour.
- Full well is ~90,000 electrons or about the 65k DN ADC 16-bit ADC limit.
- The CCDs are linear to 65k DN, but stay below about 60,000 DN to be safe.
- Noise is about 7-8 electrons in the active imaging area in most channels. A few less well behaved channels sometimes measure around 11 electrons.
- Readout time plus file creating time is 35 seconds.
- There is no longer a spurious noise issue.
- See this report for detailed characterization info in June, 2011.
- Click here for the Quantum Efficiency curve.
- The operating temperature is about -135 C.

Layout

The focalplane layout of the 4 CCDs as it is on sky and in quick look is shown below.

The platescale is 0.455 arcsec per 15 micron pixel.

The gap between CCDs is ROUGHLY 55 arcsec in Dec and 170 arcsec in RA.

The ampifiers are arranged as follows: ◦CCD1: Amps 1-4 ◦CCD2: Amps 5-8 ◦CCD3: Amps 9-12 ◦CCD4: Amps 13-16

Layout Drawings (still old)

◦Physical layout, but old ◦View into dewar window

Fringing

These backside-illuminated CCDs fringe a small amount at the wavelength of SDSS r’ filter, even more at SDSS i’, and even more at SDSS z’. You need to take appropriate data to create and later subtract scaled fringe frames. Remember that the 8000-10000 Angstrom sky is highly variable with changing emission lines, thus changing relative intensity of fringes in the fringe pattern.

Offsets

Offset from center of the 4 CCDs (the center of gutter) to center of CCD 1: ◦move the telescope1006 arcsec SOUTH (ie, -1006) ◦move 908 the telescope arcsec WEST (ie, -908)