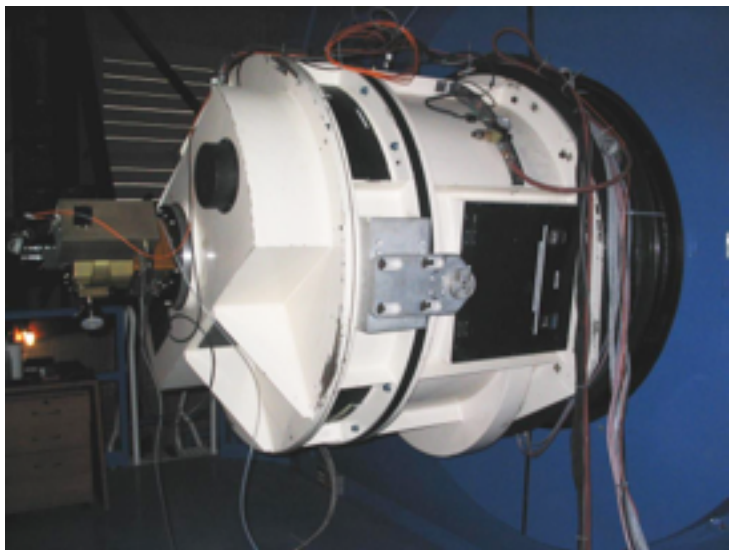
LDSS-3

THE LOW DISPERSION SURVEY SPECTROGRAPH



LDSS-3 is a high efficiency optical wide-field imager and multi-slit spectrograph installed on Magellan Clay telescope in Nasmyth West port. LDSS-3 covers the wavelength range 3800-10000 A. The instrument optics were designed to deliver very high throughput at red optical wavelengths. The corresponding field of view is 8.3 arc-minute diameter field, trimmed to 6.4 arcmin in spacial direction and has a pixelscale of 0.189 arcsec/pixel. A set of three high-throughput grisms are available for spectroscopy.

SPECTROSCOPY

Grism	Ruling density, (lines/ mm)	Resolution, (0.75" slit)	Central,Wavelength, (Angstroms)	Wavelength, Range, (Angstroms)	Dispersion, (Angstronms/ pixel)	Peak efficiency, (%)
VPH-ALL	**400**	860	7100	4250-10000	1.890	32
VPH-Blue	**1090**	1900	5000	3800-6200	0.682	32
VPH-Red	**660**	1810	8000	6000-10000	1.175	37

LDSS3 currently has three grisms available for general use: **VPH-ALL**, **VPH-Blue** and **VPH-Red**. A feature of these grisms is that the wavelength coverage and blaze vary substantially over the detector. The throughputs and wavelength ranges for the three grisms are shown in the figures below.

SPECTROSCOPIC PERFORMANCE

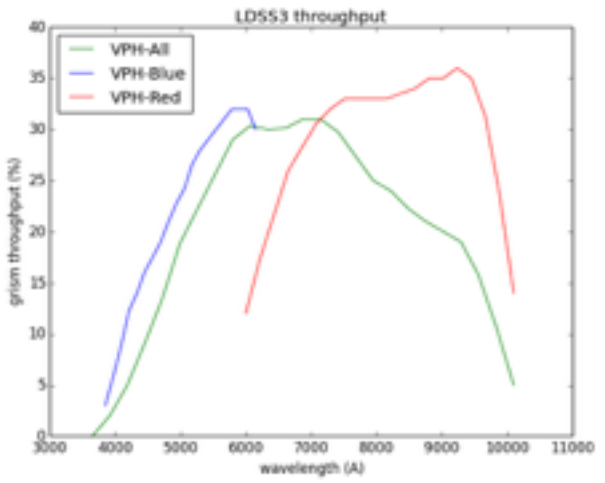


Fig.2 Throughput for all available grisms

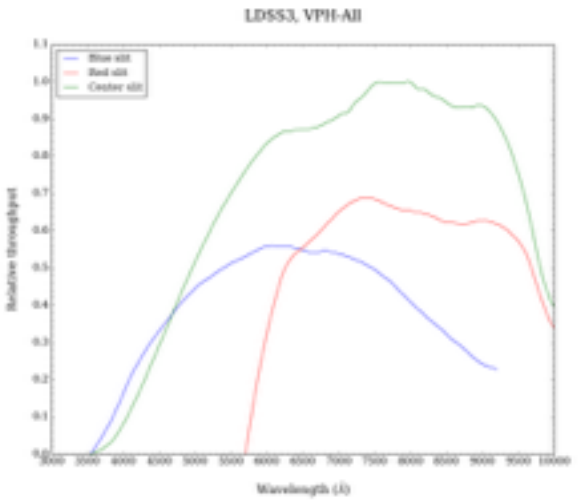


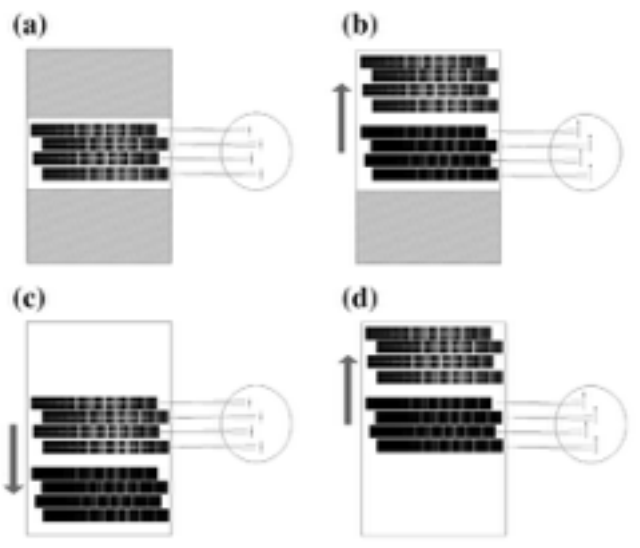
Fig.3 Relative throughput for the VPH-All grism in the three slit positions: central, red, blue

OPERATING MODES

LONG SLIT: A series of standard long-slit masks exit ranging from 0.75" to 2.15"

MULTI-SLIT: Users are responsible for designing their own multi-object masks using the dedicated software. Mask files should be submitted at least 6 weeks before observing run for their timely fabrication.

NOD & SHUFFLE: Nod-and-shuffle spectroscopy is a technique that uses very short slits (typically a few arcseconds) and chopping the spectra between opposite ends of their slits, while at the same time shuffling the charge back and forth on the CCD and nodding the telescope in the opposing direction. The advantage of nod & shuffle spectroscopy is that it allows excellent sky subtraction.



For more information: http://www.lco.cl/telescopes-information/magellan/instruments/ldss-3

IMAGING

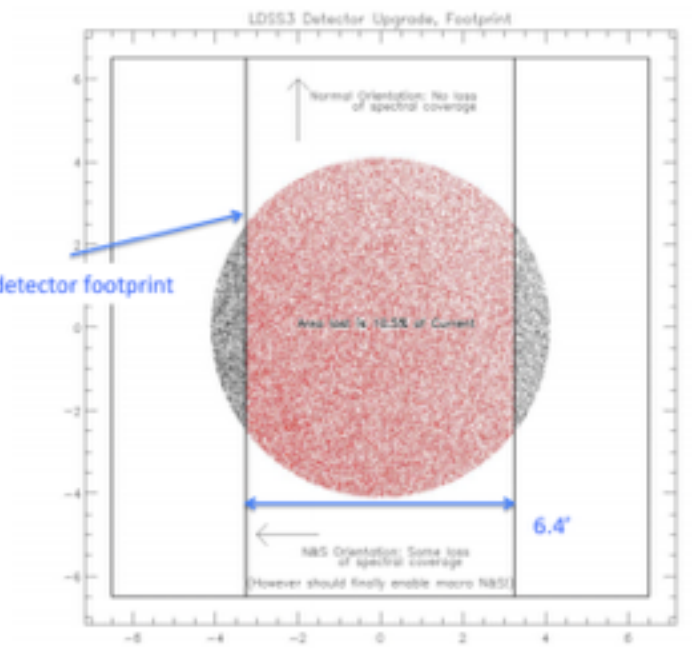


Fig.1 Detector Footprint (mosaic)

Up to 7 filters can be mounted in the filter wheel at once. Four Sloan broad-band filters (**g,r,i,z**) and a Harris B-band filter are supplied for direct imaging. An OG590 blocking filter is also available for spectroscopic observations. Observers may also supply their own filters.

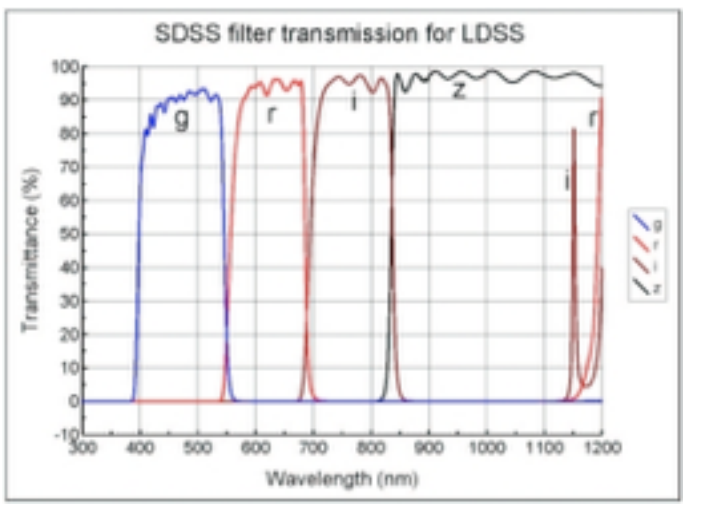


Fig.4 Sloan Filter Transmissions

PHOTOMETRIC PERFORMANCE

Measured zero points (1e-/s at airmass 1.0)

Filter	Zeropoint
g'	27.64
r'	27.80
i'	27.82
z'	27.86