

THE SLIT VIEWER

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The Slit viewer is based on a scientific camera, equipped with one CCD EEV0520 (770×1152 frame transfer), a slit wheel with nine apertures and a movable turret. The wheel contains seven reflecting plates with the slits, an image slicer, one pinhole and one mirror (see tab. 1). The movable turret contains an objective and an array of 22×22 lens for the Shack-Hartmann analysis.

The light entering in the spectrograph goes to the slit. The plate on the inside of the slit viewer reflects part of this light in the slit viewer camera while the remaining light goes through the slit into the spectrograph. The physical sizes of the slits and the corresponding projected sizes in the sky are summarized in Tab.1.

The slit viewer allows this features:

- The centering of the objects in the slit
- The focusing of the telescope
- The Guide
- The active optics correction

Tab. 1 - Apertures of the slit wheel

Aperture	Resolution	Size(mm)	Size (arcsec)	Size (Pixels)
‡ 1	17000	0.50×1.50	$2' 67'' \times 8' 0''$	14.7×44.4
‡ 2	29000	0.30×1.50	$1' 60'' \times 8' 0''$	8.8×44.4
‡ 3	57000	0.15×1.00	$0' 80'' \times 5' 3''$	4.4×29.6
‡ 4	86000	0.10×1.00	$0' 53'' \times 5' 3''$	2.9×29.6
‡ 5	43000	0.2×3.00	$1' 07'' \times 16' 0''$	5.9×88.8
‡ 6	115000	0.075×3.00	$0' 40'' \times 16' 0''$	2.2×88.8
‡ 7	143000	0.30×0.30	$1' 60'' \times 1' 60''$	1.76×1.76
‡ 8	Pinhole	0.05×0.05	$0' 27'' \times 0' 27''$	
‡ 9	mirror			

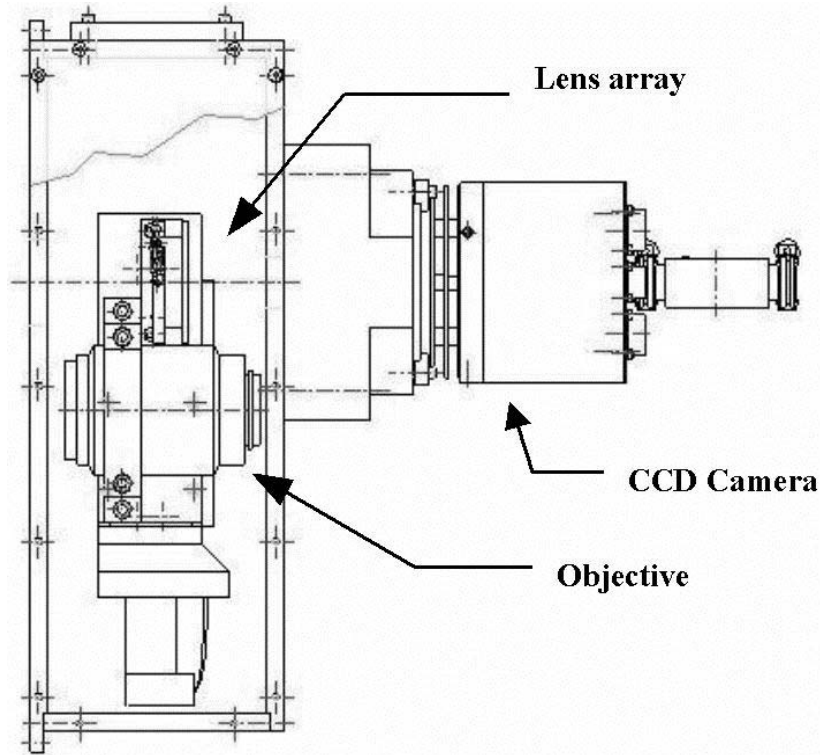


Figure 1: The slit viewer

The slit viewer camera is the standard TNG camera used for guiding and Shack-Hartmann analysis.

The centering and focusing of the objects on the slit are obtained with the same tools used by the other instruments.

While field derotation is provided by an optical derotator, the standard guiding camera of the derotator can not be used.

Due to the very small field of view (30 arcsec), the probability to find a guide-star with the slit viewer camera is very low. For this reason an algorithm based on the two spots reflected by the slit plate is used to guide during the exposition (Fig 2).

The active optics correction can be done moving the turret in the lenslet array position and comparing the star (slit wheel in *mirror* position) with the reference (slit wheel in *pinhole* position).

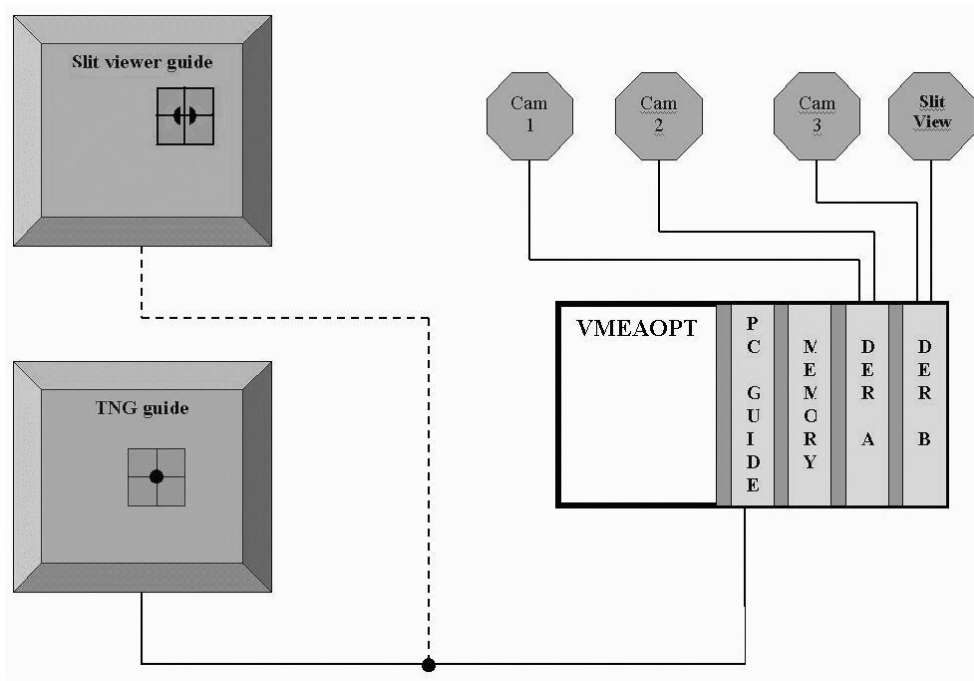


Figure 2: Guide system at TNG

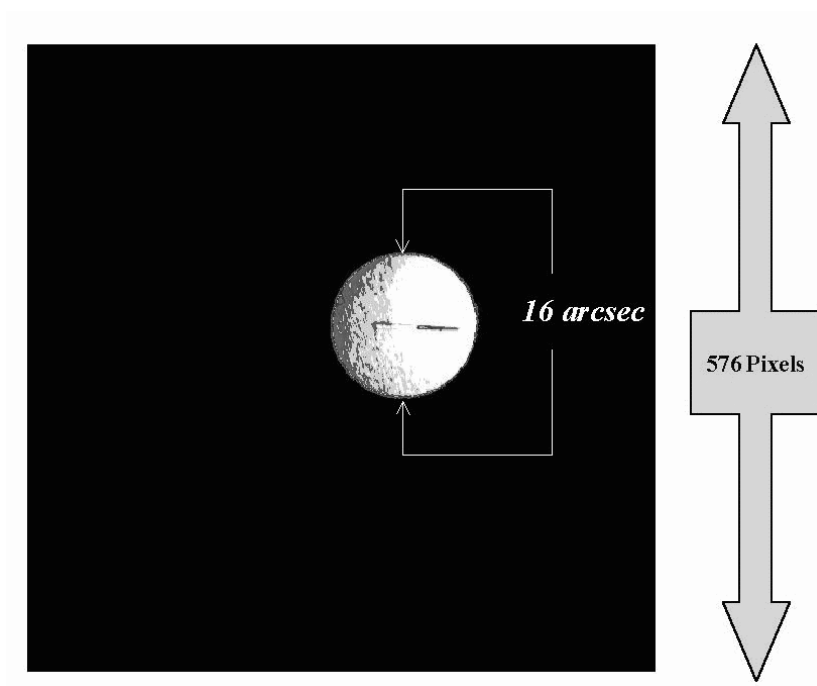


Figure 3: Flat Field lamp