

## VST in the era of the large sky surveys



Contribution ID: 9

Type: **not specified**

## Two cosmology experiments with the VST in the 2020s

*Tuesday 5 June 2018 17:20 (20 minutes)*

“I will describe two dedicated campaigns with the VST, which exploit its fast optics and high image quality, and will extend its survey capabilities in the spectroscopic and time-domain.

The first project consists in high-cadence monitoring of strongly lensed quasars, for time-delay cosmography. With the eCOSMOGRAIL collaboration, we are performing (almost) nightly-cadence campaigns on bright Southern lenses, aiming at 2% accuracy and precision on  $H_0$ , and the VST will be the ideal telescope to extend these on a larger sample of lenses discovered before 2020, reaching sub-percent uncertainties on  $H_0$ . By comparison, the three-night (foreseen) cadence of LSST is sufficient only for lenses with long delays.

The second project is a slitless-spectroscopic survey, which will provide accurate redshifts for the LSST-Euclid synergy, an accurate and wide-field object classification, and the discovery of intrinsically rare objects. Being optically “fast”, the VST can survey very wide footprints to a target depth of  $i=21$ , and its excellent image quality guarantees an accurate separation of overlapping spectra. Medium-low resolution spectroscopy will yield an unbiased coverage of emission-line objects (e.g. quasars up to  $z=4$ ), a large sample of extremely metal poor stars, and the external calibration needed in the LSST-Euclid synergy to break degeneracies (between  $E(B-V)$ , spectral type, and redshift) in photo- $z$  determination, beyond the forecasted  $\sim 0.01$  accuracy limit from broad-band information only.”

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