

VST in the era of the large sky surveys



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Euclid: a space mission to study the origin of the accelerating Universe

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In this talk, I will present Euclid, an ESA medium class space mission selected within the Cosmic Vision framework. The primary aim of Euclid is to probe with unprecedented accuracy the properties of Dark Energy, the source of still-unknown energy at the origin of the accelerated expansion of our Universe. To reach this goal, Euclid will observe ~15000 square degrees of the extragalactic sky in both three NIR (Y, J, H) and a VIS band (corresponding to R+I+Z filter), obtaining deep photometric measurements that will allow to exploit weak gravitational lensing measurements, and with NIR spectroscopy (1.25-1.85 micron), mapping the redshift distribution of star-forming galaxies over the past 10 billion years of cosmic time. The synergy between these cosmological probes (weak gravitational lensing and galaxy clustering) will allow us to probe not only the geometry of the Universe itself, but also the growth of cosmic structures, providing the basic data for a quantum leap in our understanding of Dark Energy. In combination with the main probes, additional probes will be also exploited, such as cluster of galaxies, strong lensing statistics, CMB Euclid galaxy survey cross-correlations, giving also important insights on Dark Matter and gravity properties.

The mission will provide also a treasure of legacy data, allowing the study of several tens of millions of spectroscopic sources, and of over a billion of galaxies with imaging and photometric redshifts.

Presenter: MORESCO, M.