Contribution ID: **22** Type: **not specified**

Measuring Dark Energy parameters with Type Ia Supernovae in LSST

Thursday 10 July 2025 14:30 (20 minutes)

The Vera C. Rubin Observatory will conduct the Legacy Survey of Space and Time (LSST), a synoptic astronomical survey of large étendue (more than 20000 deg2) starting in october 2025. A systematic scan of the celestial sphere will be perform for ten years, leading to the largest astronomical catalog ever compiled (83 pB) with 17 billions of stars and 20 billions of galaxies.
With a high cadence of observation and a high étendue, LSST will observe an astounding number of type Ia Supernovae (SNe Ia) - more than 900000 after ten years- including a large number (more than 200000 after ten years) of SNe Ia with accurate cosmological distances estimated from SNe Ia parameters. This "cosmology-grade"sample will be used to measure cosmological parameters with high accuracy.
In LSST SNe Ia parameters are extracted from light curve measurements using five photometric bands. The accuracy of the parameters is thus governed by the quality of the light curves in terms of sampling and signal-to-noise ratio. The LSST observing strategy is thus critical to observe a large sample of well-sampled SNe Ia: a high cadence of observation and a large number of visits are mandatory.
This talk will present the impact of observing strategy parameters on Dark Energy measurements using SNe Ia as cosmological probe. It will be shown that an optimal observing strategy is required to measure Dark Energy equation-of-state parameters with high accuracy.

Author: GRIS, Philippe (Université Clermont Auvergne (FR))

Presenter: GRIS, Philippe (Université Clermont Auvergne (FR))

Session Classification: Parallel 1