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Update from Australia's SkyMapper, OzDES and the DES supernova cosmology analysis

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The Dark Energy Survey (DES) is using four probes to investigate the dynamics of the expansion of the Universe. The DES Supernova Program (DES-SN) is observing 27 square degrees with a 6-day cadence to obtain a large sample of type Ia supernovae for cosmology. In collaboration with DES, OzDES is using the AAT to obtain redshifts and classifications for objects in the DES fields. While probing dark energy using type Ia supernovae is the prime aim of the supernova survey, the observing strategy enables us to conduct a number of other investigations, such as AGN reverberation mapping and galaxy properties.

The SkyMapper Telescope is a 1.3m wide-field robotic optical telescope located at Siding Spring Observatory in Australia. SkyMapper is performing a digital Southern Sky Survey in six filters (uvgriz) and the SkyMapper Transient (SMT) survey. The later, explores variability in the southern sky by performing both a rolling search and a Target of Opportunity program. The SkyMapper Supernova program searches ~1000deg^2 per night with a 3-4 day cadence, discovering supernovae at redshift z < 0.1. We also have an automatic response program for the search of optical counterparts for gravitational waves and fast radio burst events.

In this talk, I will present updates preliminary cosmological parameter constraints from the first 3-years of the DES-SN survey and SkyMapper first results. I will also present a Deep Learning method to classify transients only using photometric measurements which will contribute to time-domain astronomy.

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