

## VST in the era of the large sky surveys



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# Strong gravitational lensing studies with Herschel and multi-wavelength follow-up observations: synergies with KiDS.

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“Strong gravitational lensing is a powerful tool for modern cosmology. It is one of the few probes capable of directly mapping galactic dark matter distribution, providing independent cosmological parameter estimates while also enabling the study of individual galaxies which are otherwise too faint for detailed analysis. Lensing is therefore one of the most powerful tools to study very distant galaxies and to probe galaxy evolution and the mass distribution of our Universe up to high redshift.

The reliable identification of large samples of high-redshift lensing systems has been recently enabled by Herschel. It has been shown that the steep sub-millimeter source counts lead to a strong gravitational “magnification bias”. This phenomenon, combined with the wide areas observed by Herschel, represent an extremely efficient means of identifying a large number of strong lensing events, once the obvious contaminant populations of nearby galaxies and blazars are removed. This also represents an almost complementary way to identify lensing events with respect to the one based on optical data.

Many multi-wavelength follow-up programs with e.g. HST, SALT, ALMA have been developed to study both the background sources and the foreground lenses identified by Herschel. In my talk I will give an overview of the state of the art of the strong gravitational lensing studies enabled by Herschel, I will discuss their results in the context of future observations with e.g. JWST, Euclid and SKA and I will highlight the synergies with KiDS observations.”

**Presenter:** MARCHETTI, L.