

Abstract

'Synergy' means 'the interaction of two or more agents to obtain a combined effect greater than the sum of their separate effects'. With this in mind, in this talk I shall present my current lines of research, all relying on developing novel combinations of astrophysical and cosmological observables to the aim of testing foundational aspects of the concordance cosmological model. Specifically, I shall discuss cosmological tests of gravity and inflation on the largest cosmic scales, indirect detection of particle dark matter signatures, and studies of dark energy and modified gravity models. All, with a view on the current and oncoming generation of cosmological experiments and large-scale surveys.