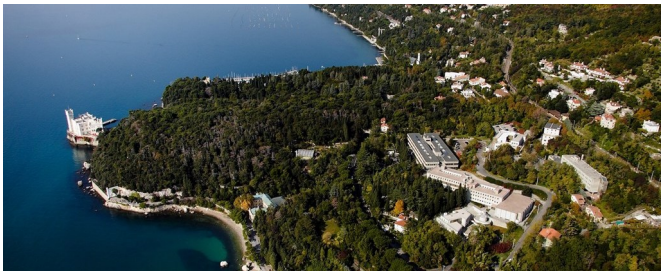

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Testing Gravity with CMB and LSS cross-correlations

Wednesday 30 August 2023 21:45 (5 minutes)

The accelerated expansion of the Universe is one of the greatest mysteries of modern cosmology. Upcoming and future cosmological observations will help to shed light on this feature of our Universe. The accelerated expansion is canonically attributed to the Dark Energy (DE), encapsulated in the Lambda factor in the Einstein field equations of gravity, but its nature is still not understood. While observations supply strong evidence in favor of the standard model of cosmology Lambda-CDM, a plethora of different modified gravity models (MG) can still arise and describe gravity and DE in another way than a Lambda-constant. In addition, some tensions have been found in the Lambda-CDM which could be hinting at new physics beyond the standard model, and MG models can provide some alleviation to these tensions. In our work, we exploit the Effective Field Theory (EFT) description which allows us to describe gravity and DE in a general way, encompassing single-field models. The strength of this approach is that we can describe not only general features of gravity but also recover model-dependent results through a mapping procedure. Upon this theoretical setting, in this work, we test Lambda-CDM and MG/DE models using cross-correlations of diverse probes and forecast future sensitivity to discriminate among MG models. With the advent of next-generation wide galaxy surveys and the high sensitivity maps of the microwave sky delivered by Planck and expected from future CMB data, it is crucial and timely to investigate the interactions and complementarities of probes of the Universe that can shed light on gravity on cosmological scales.

Presenter: FRITTOLI, Guglielmo

Session Classification: Posters of wednesday (ignore time)