Contribution ID: **36** Type: **not specified**

The early dark energy resolution to the Hubble tension in light of large-scale structure data and the CMB lensing anomalies

Thursday 10 December 2020 16:30 (20 minutes)

Early Dark Energy (EDE) contributing a fraction f_EDE(z_c) ~ 10% of the energy density of the universe around z_c = 3500 and diluting as or faster than radiation afterwards, can provide a simple resolution to the Hubble tension, the ~ 5σ discrepancy –in the ΛCDM context –between the H0 value derived from early- and late-universe observations. However, the inclusion of Large-Scale Structure (LSS) data, which are in ~ 3σ tension with both ΛCDM and EDE cosmologies, might break some parameter degeneracy and alter these conclusions.
I will discuss the viability of the EDE scenario in view of a host of high- and low-redshift measurements, including LSS observations from recent weak lensing surveys, CMB, Baryon Acoustic Oscillation (BAO), growth function and Supernova Ia (SNIa) data, as well as the full-shape galaxy power spectrum from BOSS/SDSS, analyzed using the effective field theory (EFT) of LSS. I will show that the EDE cosmology still provides a potential resolution to the Hubble tension when confronted against current LSS data, though upcoming spectroscopic galaxy surveys, such as Euclid and DESI, will put it under stringent new tests. Finally, I will reassess the EDE scenario in light of the CMB lensing anomalies in Planck data, and I will outline further theoretical extensions that could allow to fully restore cosmological concordance.

Primary author: Dr MURGIA, Riccardo (LUPM, CNRS & Montpellier University)

Presenter: Dr MURGIA, Riccardo (LUPM, CNRS & Montpellier University)

Session Classification: Contributed talks