Contribution ID: **26** Type: **Plenary/Parallel talk**

An effective fluid description of scalar-vector-tensor theories under the sub-horizon and quasi-static approximations

Monday 22 August 2022 16:50 (20 minutes)

In general, modified gravity theories can be seen as dark energy theories using the effective fluid approach. In this work, we apply this formalism to the most general second-order scalar-vector-tensor (SVT) theory of gravity. This will allow us to encompass all the free functions of the theory in terms of the equation of state, speed of sound, velocity, and anisotropic stress of a very general dark energy fluid. We show that under the quasi-static and sub-horizon approximations it is possible to obtain analytical expressions for the fields and the gravitational potentials, and thus fairly condensed expressions for the perturbations of the fluid. Using these analytical results, we reproduce some well-known computations in cosmological models within the SVT framework, such as quintessence, kinetic gravity braiding, f(R), and others, in order to test the accuracy of our approach. Furthermore, we propose a designer dark energy model whose background evolution is identical to that of the standard cosmological model, but different at the linear perturbative level. For this designer model, we compute some cosmological observables, such as the growth factor, the angular power spectrum, and the matter power spectrum, and compare them with the predictions given by the standard cosmological model.

Author: ORJUELA-QUINTANA, JOHN BAYRON (UNIVERSIDAD DEL VALLE)

Co-authors: VALENZUELA TOLEDO, CESAR ALONSO (Departamento de Física, Universidad del Valle); ALBERTO CARDONA CASTRO, WILMAR

Presenter: ORJUELA-QUINTANA, JOHN BAYRON (UNIVERSIDAD DEL VALLE)

Session Classification: Parallel Session Lecture Room

Track Classification: Modified gravity & dark energy