

Third Workshop on Current Challenges in Cosmology



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Generalized Coupled Vector Dark Energy Models

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I will present a detailed approach for building models of interacting dark energy that incorporate vector fields conformally and disformally coupled to dark matter, independent of the underlying gravity theory. This discussion will include a focus on establishing general conditions to prevent the presence of ghost instabilities within the theory. For concreteness, we will consider the standard Proca theory with a vector exponential potential to describe the vector-tensor sector. Additionally, specific coupling functions will be assumed to investigate the dynamics of the cosmological background using dynamical system techniques. To gain a more quantitative understanding of the effects of the coupling parameters on the cosmological background evolution, we will also perform numerical computations. These results shed light on how these couplings can significantly influence the cosmological dynamics during various stages of the Universe's evolution compared to the standard Λ CDM cosmological model.

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