

Spanish and Portuguese Relativity Meeting



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Axion-like dark energy: late rather than early

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Dynamical models where the dark energy component is given by a canonical scalar field are known as quintessence models. In this work, we propose an axion-like potential which emerges from physically motivated considerations. The potential naturally satisfies the necessary conditions for tracking behaviours (alleviating the cosmic coincidence problem); i.e., once we fix our potential, no matter which initial condition is chosen, all the trajectories will converge to the same path. It also explains the late-time acceleration of the Universe through an almost effective cosmological constant, as a result of the non-null value of the potential at the minimum. We distinguish two cases: in the first one the field has not yet reached the minimum of the potential, while in the second case the field is currently oscillating around the minimum.

We study the dynamical system and the cosmological perturbations of the model. We then obtain the matter power spectrum and $f\sigma_8$ and compare them with the Λ CDM ones. Finally, we present the cosmological constraints of our model using observational data through an MCMC approach.

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