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Generalized tracker Quintessence models for dark energy

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In this talk, I will discuss the dynamical properties of tracker quintessence models using a general parametrization of their corresponding potentials and show that there is a general condition for the appearance of a tracker behavior at early times. I will also discuss how to determine the conditions under which the quintessence tracker models can also provide an accelerating expansion of the universe with an equation of state closer to -1 . Apart from the analysis of the background dynamics, the discussion will include linear density perturbations of the quintessence field in a consistent manner and using the same parameterization of the potential, and the influence they have on some cosmological observables. The generalized tracker models are compared to observations, and their appropriateness to ameliorate the fine-tuning of initial conditions and their consistency with the accelerated expansion of the Universe at late times will be discussed.

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