

## Future Destiny of Quintessential Universe and Constraint on Model from Deceleration Parameter

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**Abstract:** The evolution of the quintessence in various stages of the universe, i.e., the radiation-, matter-, and quintessence-dominated stages, is closely related with the tracking behavior and the deceleration parameter of the universe. We gave the explicit relation between the equation-of-state of the quintessence in the epoch of the matter-quintessence equality and the inverse power index of the quintessence potential, obtained the constraint on this potential parameter coming from the present deceleration parameter, i.e., a low inverse power index. We point out that the low inverse power-law potential with a single term cannot work for the tracking solution. In order to have both of the tracker and the suitable deceleration parameter it is necessary to introduce at least two terms in the quintessence potential. We give the future evolution of the quintessential universe.

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