

Phenomenology 2023 Symposium



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Gauged quintessence

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We introduce the gauged quintessence model, in which the dark energy field (quintessence) has a $U(1)$ gauge symmetry. This is the first quintessence model under a gauge symmetry. We identify the real part of the complex scalar as the dark energy field (quintessence), while the imaginary part is the longitudinal component of a new gauge boson. It brings interesting characters to dark energy physics. The $U(1)$ gauge boson can affect the quintessence dynamics, and the solicited dark energy properties can constrain the gauge coupling constant. While the uncoupled quintessence model severely suffers from the Hubble tension, the gauged quintessence might alleviate the situation.

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