

Light gravitino dark matter: LHC searches and the Hubble tension

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The recent measurements of the cosmological parameter H_0 from the direct local observations and the inferred value from the cosmic microwave background show approximately 4σ discrepancy. This may indicate new physics beyond the standard Λ CDM. We investigate the keV gravitino dark matter that has a small fraction of nonthermal components (e.g., from the late decay of next-to-lightest-supersymmetric-particle bino) under various cosmological constraints. We find such a scenario is highly predictive and can be tested by searching for the dilepton plus missing energy events at the LHC. Besides, we also discuss its implication for Hubble tension, which can be reduced to 3σ level marginally.

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Dark matter

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