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New early dark energy and its equation of state

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The Hubble Tension is the discrepancy between the measured value of the Hubble parameter H_0 and its Λ CDM model prediction using CMB data. New Early Dark Energy (NEDE) addresses this tension using a triggered phase transition in the dark sector. In this work we constrain the properties of NEDE using recent datasets. We study the equation of state parameter, characterizing the post-phase transition fluid, allowing it to evolve in time. Our results indicate that data is compatible with a simple time dependence that could arise from a mixture of radiation and a stiff fluid. Our model shows a significant reduction of the tension down to below 3σ .

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