

# A new constraint on Early Dark Energy using the profile likelihood

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A dark energy-like component in the early universe, known as early dark energy (EDE), is a proposed solution to the Hubble tension. Currently, there is no consensus in the literature as to whether EDE can simultaneously solve the Hubble tension and provide an adequate fit to the data from the cosmic microwave background (CMB) and large-scale structure of the universe. In this talk, I will give a brief overview on the status of EDE and describe the disagreement about EDE in the literature. To explore the origin of this disagreement, we deconstruct the current constraints on EDE. We use two different methods, a grid sampling and a profile likelihood, and find evidence that the current constraints on EDE might suffer from (prior) volume effects upon marginalization and are possibly biased towards small values of the EDE fraction. Using the profile likelihood, we construct a new constraint that is not subject to volume effects.

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