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Classical de Sitter string backgrounds and the swampland

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Solutions of string theory with a four-dimensional de Sitter space-time could serve as an interesting starting point to build cosmological models of the early universe, or the present one. Obtaining such solutions in a well-controlled manner is however notoriously difficult. This has recently led to various conjectures, in the context of the swampland program, that strongly constrain the existence of de Sitter solutions in string effective models, with drastic consequences regarding single field inflation or quintessence. Focusing on classical string backgrounds, these conjectures can be precisely tested, with sharp no-go theorems, as well as promising counter-examples, that could eventually serve in stringy cosmological models. We will present an overview and new results on this topic.

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