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Late-time accelerating cosmologies

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I will characterize the late-time expansion rate of the universe in multi-scalar cosmologies with multi-exponential potentials, taking advantage of previously unobserved universal asymptotic features of the solutions to the cosmological equations. This provides a simple diagnostic of whether any given multi-exponential potential holds the necessary conditions for late-time cosmic acceleration. I will also discuss the conditions under which scaling solutions are inevitable late-time cosmological attractors for such theories. For scaling cosmologies, all field-space trajectories are known analytically, which allows one to characterize exactly any observable of interest. Multi-exponential potentials have been studied extensively as phenomenological models of quintessence and, moreover, they are ubiquitous in string-theoretic constructions. I will therefore sharpen several statements on the low-energy signatures of quantum gravity in this context.

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