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”Stasis, Stasis, Stasis”

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Many theories of physics beyond the Standard Model give rise to a unique early-universe cosmology during which the abundances of different energy components such as matter, radiation, and vacuum energy remain constant across extended cosmological eras, even though the universe is expanding. Even more surprisingly, such “stasis” epochs are actually universal attractors, with the universe necessarily entering (and later exiting) such epochs for a wide variety of initial conditions. In this talk, we give an overview of the stasis phenomenon and discuss some of its implications and applications. These stretch across the entire cosmological timeline, ranging from potential implications for gravitational waves and primordial density perturbations, dark-matter production, and structure formation all the way to early reheating, early matter-dominated eras, and even the age of the universe. Taken together, the stasis phenomenon therefore greatly expands the range of theoretical and phenomenological possibilities for the physics of the early universe.

Author: DIENES, Keith R. (University of Arizona)

Presenter: DIENES, Keith R. (University of Arizona)

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