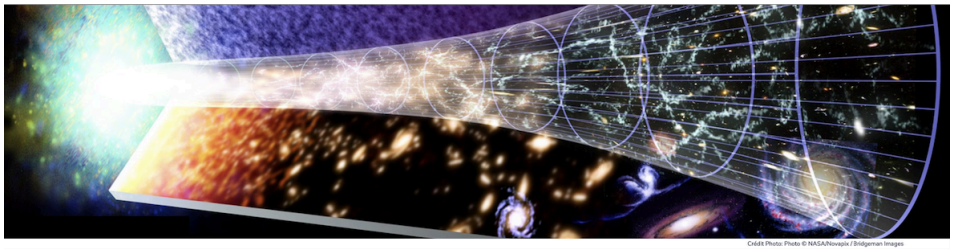

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# Strong Mixing at the Cosmological Collider

*mardi 15 avril 2025 09:25 (25 minutes)*

Apart from its manifest interest in the understanding of the first moments of the universe, the framework of cosmic inflation is also the best way we know to probe fundamental physics at very high energies. In particular, the spontaneous production of massive particles due to the expanding background can leave potentially visible imprints in cosmological correlation functions known as the cosmological collider signal. Within the effective field theory of inflation (EFTI), it is possible to treat these exchange processes in a model-independent way, and explicit computations taking advantage of the conformal invariance of late-time observables have been carried out using various techniques such as the cosmological bootstrap. More recently, the full parameter space allowed by the EFTI has been explored allowing for boost-breaking setups leading to more striking phenomenological signatures, and the recently developed cosmological flow approach numerically gives us access to any correlation function. In this talk, I will expose a treatment of a parameter space region that remains analytically unknown: the strong mixing regime where the inflaton field and the massive particle can experience an infinite number of flavor transformations during the process. I will describe ongoing efforts to describe this regime based on extensions of standard single-field effective field theory techniques.

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