

Extending the reach of the cosmological collider

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Massive field excitations during the inflationary era, imprinted on cosmological correlation functions, can provide us with a unique opportunity to probe heavy degrees of freedom far beyond the reach of terrestrial colliders. In the simplest inflationary models, any such cosmological collider signal is exponentially suppressed for particles much heavier than the inflationary Hubble scale, limiting the potential reach of such new physics searches. After reviewing the key observables, I will discuss some new mechanisms to go beyond this limitation for particles with varying charges and spins. Together, these mechanisms motivate novel searches in the context of future spectroscopic surveys, which would have the potential to directly access well-motivated high-scale scenarios, such as Grand Unified Theories.

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