

# Primordial density perturbations as probes of high energy physics

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The energy scale of the primordial universe can be much higher than those accessible by any terrestrial colliders. We show that particles excited during this epoch, either through a classical or quantum-mechanical process, left their signatures in the primordial density perturbations which seeded the large-scale structure of the universe today. The encoded information includes the mass and spin spectra of these particles, as well as the time dependence of the background scale factor. This provides a unique opportunity to study high energy physics, as well as to search for direct evidence for the inflation or an alternative scenario. We discuss the observational prospects of some of these signatures in the near future.

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