

JOINT TUFTS/MIT COSMOLOGY SEMINAR

A new paradigm for particle cosmology

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Modern cosmology has been remarkably successful in describing the Universe from a second after the Big Bang until today. However, its physics before that time is still much less certain. It profoundly involves particle theory beyond the Standard Model to explain long-standing puzzles: the origin of the observed matter asymmetry, nature of dark matter, and cosmic inflation. In this talk, I will explain that fractions of a second after the Big Bang, relic axion-gauge fields can relate and explain these seemingly unrelated phenomena in early and late cosmology. Moreover, these relics would provide a new window into the early Universe in the form of primordial chiral gravitational waves. This smoking gun signature is testable by future CMB missions.

Tuesday, April 7, 2020, 2:30 pm
online
Tufts University