Resonant Cosmic Strings with Time-Dependent Tension

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Abstract

Motivated by recent work on cosmic strings with a time-dependent tension induced by rolling moduli, we study the case of periodically varying string tensions. We focus on novel dynamical features that arise in cosmic string networks and loops through parametric resonance. In particular, we show that long strings develop growing resonant modes, while loops undergo oscillations within fixed resonance bands. We also comment on possible early-universe signatures and on the viability of realizing such dynamics for fundamental cosmic strings.

Keywords: String cosmology, cosmic strings, early universe

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