

Topologically Stable Monopoles from Metastable Cosmic Strings

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We present a novel mechanism for the formation of topologically stable monopoles with two unit of Dirac magnetic charges from the decay of metastable string network in an SO(10) GUT. Superheavy monopoles (masses $\sim 10^{15} - 10^{17}$ GeV) can be produced with an observable flux from a string network with the dimensionless tension $G\mu \sim 10^{-9} - 10^{-5}$ (μ is the string tension and G the Newton's constant) in the scaling regime. They are accompanied by a high-frequency gravitational wave background from the metastable strings. We discuss the possibility of the production of relativistic intermediate mass monopoles (masses $\sim 10^8 - 10^{14}$ GeV) which could be observed in neutrino detectors such as IceCube and KM3NeT.

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