ID de Contribution: **3** Type: **Non spécifié**

Effect of the local population of superstrings on detection rates

mercredi 13 juin 2018 13:45 (15 minutes)

Cosmic superstrings of string theory differ from conventional cosmic strings of field theory, influencing the expectations for searches for relics from inflation. The universe's average density of cosmic superstrings can easily exceed that of conventional cosmic strings having the same tension by two or more orders of magnitude. The cosmological behavior of the remnant superstring loops is qualitatively distinct because the string tension is exponentially smaller than the string scale in flux compactifications in string theory. Low tension superstring loops live longer, experience less recoil (rocket effect from the emission of gravitational radiation) and tend to cluster like dark matter in galaxies. Clustering enhances the string loop density with respect to the cosmological average in collapsed structures in the universe. The enhancement at the Sun's position is $\sim 10^5$. I present a model encapsulating the leading order string theory effects, the current understanding of the string network loop production and the influence of cosmological structure formation suitable for forecasting the detection of superstring loops by LISA. Clustering dominates rates for $G\mu < 10^{-11.2}$ and $G\mu < 10^{-10.6}$ for cusps and kinks, respectively. I forecast experimentally accessible gravitational wave bursts for $G\mu > 10^{-15}$ and $G\mu > 10^{-14.1}$ for cusps and kinks, respectively.

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Classification de Session: Talks and group discussions