

C-parity, magnetic monopoles and higher frequency gravitational waves

We will discuss the complementary signatures of gravitational waves and observable flux of the GUT monopoles when $SO(10)$ grand unified symmetry is spontaneously broken via the left-right symmetric model with C-parity also unbroken [C converts $Q \rightarrow -Q$, where Q is the electric charge operator in $SO(10)$.] This breaking produces the topologically stable GUT monopole as well as a GUT scale C-string. The subsequent breaking at an intermediate scale of C-parity produces domain walls bounded by C-strings, found by Kibble, Lazarides and Shafi. A limited number of inflationary e -foldings experienced during these breakings can yield an observable number density of primordial GUT monopoles. The C-strings also experience this inflationary phase, and the subsequent string-wall network decays through the emission of gravitational waves. We estimate the gravitational wave spectrum from these composite structures over a range of values of the domain wall tension σ . Depending on σ the spectrum displays a peak in the higher frequency range between 10^2 to 10^5 Hz.

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