MAGNETIC FIELD OF COSMIC STRINGS IN THE EARLY UNIVERSE

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S u m m a r y

Cosmic strings are topological defects which can be formed as a result of phase transitions with a spontaneous symmetry breaking in the early Universe. The possibility of the generation of a magnetic field around a cosmic string on the Grand Unification energy scale (GUT scale) in the early Universe immediately after the termination of the deconfinement-confinement phase transition has been studied. It is found that a circular current and a magnetic field directed along the string are induced around the string in the vacuum of a pseudoscalar matter consisting of charged pions. We also studied the interaction between the magnetic flux tube surrounding the string (the string magnetosphere) and the cosmic plasma in the early Universe. A possibility of magnetization of the cosmic plasma surrounding the string owing to its interaction with the string magnetic field has been analyzed.