

ELECTROMAGNETIC EMISSION OF COSMIC STRINGS

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S u m m a r y

Cosmic strings are one of the types of topological defects which can appear during appropriate phase transitions in the expanding early Universe. Of a particular interest are the superconducting cosmic strings, in which the massless carriers of charge can move without any resistance. It is shown that the superconducting cosmic strings in an intergalactic magnetic field can be powerful sources of nonthermal radiation. We have calculated the spectra of the synchrotron, self-Compton, and inverse Compton emissions of relativistic electrons accelerated on the leading edge of a shock wave around the string. The modern X-ray and gamma-telescopes can register the loops of cosmic strings at a relatively small distance of about 0.1 Mpc. Nevertheless, the near-cusp regions can generate much powerful but appreciably collimated and therefore more scarce impulses.