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Magnetic Reconnection in the Wakes of Cosmic Strings

Thursday, 15 June 2023 14:00 (20 minutes)

The motion of cosmic strings in the universe leads to the generation of wakes behind them. We study magnetized wakes of cosmic strings moving in the post recombination plasma. We show that magnetic reconnection can occur in the post shock region. Since the width of the cosmic string wake is very small, the reconnection occurs over a very short length scale. The reconnection leads to a large amount of kinetic energy being released in the post shock region of the cosmic string wake. This enhances the kinetic energy released during the reconnection. We make a rudimentary estimate of the kinetic energy released by the magnetic reconnection in cosmic string wakes and show that it can account for low-energy Gamma Ray Bursts (GRBs) in the post recombination era.

Keywords: cosmic strings, shocks, magnetic reconnection.

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Cosmology

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