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Magnetic reconnection in cosmic string wakes

Tuesday 13 December 2022 14:00 (1 hour)

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 of the cosmic string wake. This leads to a large amount of kinetic energy being released in the post-shock region of the wake. Since the width of the cosmic string wake is very narrow, the reconnection occurs over a very short lengthscale. This enhances the kinetic energy released during the reconnection. It is well known that magnetic reconnection can lead to Gamma Ray Bursts (GRB). 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 in the post recombination era.

Keywords: cosmic strings, shocks, magnetic reconnection.

Session

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