

Short-Duration GRBs from Magnetic Reconnection in Cosmic String Wakes

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Magnetic reconnection in the magnetized wakes of cosmic strings results in the release of a large amount of energy. This energy is released in a short period of time. In this work, we show that this sudden release of energy can result in a Gamma-Ray Burst (GRBs) of short duration. Since the magnetic reconnection occurs due to the shock collisions in the cosmic string wake, we use a modified internal shock model to calculate the fluence, burst duration and light curves for the resulting GRB. The BATSE data indicates that short GRBs can be related to a large energy release from an extremely compact emission region. We show that the characteristics of short duration GRB's originating from magnetic reconnection in cosmic string wakes are consistent with the BATSE data.

Keywords: cosmic strings, wakes, magnetic reconnection, GRBs.

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