



Contribution ID: 168

Type: Poster

Shock formation in magnetized wakes of cosmic strings.

Tuesday 13 December 2022 14:00 (1 hour)

We study the formation of shocks in the wakes of moving cosmic strings. The plasma considered is a magnetized plasma with a high beta value. We find that multiple shocks may form in the cosmic string wake. A detailed numerical study is carried out to study the structure of the shocks. We use a 2D-magnetohydrodynamic simulation to study the evolution of the magnetic fields in the shocks. The presence of multiple shocks will affect the observational signals of cosmic string wakes. Another important result that we find is the possibility of magnetic field reconnection in the wakes of these cosmic strings. The magnetic field lines get rearranged to form closed loops. The possibility of magnetic reconnection indicates the change of magnetic energy to kinetic energy. This can have several observational consequences for the magnetized wakes. The reconnection also leads to the decrease of the magnetic field in the postshock region.

Session

Astroparticle Physics and Cosmology

Primary author: Mr NAYAK, Soumen (School of Physics, University of Hyderabad)

Co-authors: Mr SAU, Sovan (School of Physics, University of Hyderabad); Dr SANYAL, Soma (School of Physics, University of Hyderabad)

Presenter: Mr NAYAK, Soumen (School of Physics, University of Hyderabad)

Session Classification: Poster - 2