

Abstract Submitted
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Magnetic Field Decay and Particle Acceleration when Large-amplitude Magnetic Shear Waves Propagating through a Pulsar Wind Termination Shock YINGCHAO LU, FAN GUO, HUI LI, PATRICK KILIAN, CHENGKUN HUANG, Los Alamos Natl Lab, EDISON LIANG, Rice University — How magnetic field energy converts to particle energy is a major problem in highly magnetized outflows in pulsar wind nebulae, gamma-ray bursts and jets from black holes. Here we report PIC plasma kinetic simulations of a large-amplitude, circularly polarized wave passing through a relativistic shock, an expected situation at the pulsar wind termination shock. We find that this process is subject to dissipation of superluminal waves produced by parametric decaying instability at the shock front. This leads to efficient decay of magnetic field and allow strong particle acceleration at the shock front.

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