

Abstract Submitted
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Electron energization in upstream of collisionless electron/ion shocks produced by interpenetrating plasmas¹ NEDA NASERI², Middle Tennessee State University, VLADIMIR KHUDIK, The University of Texas Austin, GENNADY SHVETS, Cornell University — Relativistic collisionless shocks are considered responsible for particle energization mechanisms leading to particle acceleration. While particle acceleration in shock transition region has been extensively investigated, aspects and mechanism of electron energization in upstream region of the shock is still unclear. We study electron energization mechanism in this area using two dimensional particle-in-cell simulations. We show that electron energization happens due to interaction of electrons with induced electric fields of self-generated magnetic vortices (MV) in upstream region of the shock. Electrons gain significant amount of energy during interaction.

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