

Abstract Submitted
for the APR09 Meeting of
The American Physical Society

PIC modeling of ion heating in RFP-like plasma VLADIMIR SVIDZINSKI, HUI LI, BRIAN ALBRIGHT, Los Alamos National Laboratory — Strong ion heating is observed during sawtooth crashes in the reversed field pinch (RFP). This effect can be partially explained as the heating due to viscous damping of localized plasma flows generated by tearing modes [1] at sawtooth crashes. Here we attempt a self-consistent modeling of the effect in fully kinetic particle in cell simulations in 2-D plane geometry with initial plasma equilibrium parameters relevant to those in RFP plasmas. The initial equilibrium is taken to be tearing unstable. Preliminary results show that when the proton to electron mass ratio is close to the realistic one, part of the magnetic field energy is converted to ion flow energy and then to ion thermal energy while the total electron energy is almost unchanged. 1. V. A. Svidzinski, G. Fiksel, V. V. Mirnov, and S. C. Prager, Phys. Plasmas Vol. 15, p. 062511 (2008).

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Date submitted: 06 Jan 2009

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