

OBSERVATION OF A FAST RECONNECTION TIME
IN THE FRC FORMATION

M.E. Kayama, P.H. Sakanaka, M. Machida, Y. Aso,
J. Busnardo Neto and H.K. Böckelmann
Instituto de Física, UNICAMP
C.P. 6165, 13081, Campinas, SP, Brazil

We have observed a fast reconnection time during the formation of field reversed configuration, FRC, in one meter mirrorless linear theta-pinch device TUPA-1. The device has a fast rise-time of one microsecond and the configuration was studied during the first half cycle of ringing main bank discharge. The magnetic field was mapped by magnetic probes, the separatrix radius was measured by the excluded flux probe, and the ion temperature by the Doppler broadening using helium gas. A fast reconnection time of less than 0.2 microsec was observed. This is explained in terms of forced reconnection during the Kruskal-Schwartzschild instability. The results of a hybrid simulation code agrees with the experimental implosion profile.

Supported by FINEP, CNPq, FAPESP and CNEN.