

Abstract Submitted  
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**Kinetic Behaviors of Energetic Ions in Oblate Field-Reversed Configuration formed by Plasma Merging** MICHIAKI INOMOTO, University of Tokyo, TOHRU II, AKIHIRO KUWAHATA, HIROSHI TANABE, SHINGO ITO, YASUSHI ONO, TS TEAM — Energetic ions are keys to improve stability and confinement of the field-reversed configuration (FRC) plasma. During the merging formation of an oblate FRC, the reconnection outflow generates sheared toroidal flow whose direction is determined by the polarity of the merging two spheromaks. The experimental results show that the decay rate and the electron density profile of the oblate FRC are strongly affected by the direction of this toroidal flow. When the toroidal flow is anti-parallel to the plasma current on the outside of the magnetic axis, the electron density peaks near the plasma edge and the FRC suffers from rapid decay. Numerical calculation of the fast ion's trajectory shows that most of the ions in this case drift toward outboard side and escape from the plasma region in a short period, indicating that the differences in the decay rate and the density profile are mainly induced by the preferential particle loss of the energetic ions.

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