Please arrange my poster next to M.Akimitsu and Q.Cao.

Abstract Submitted
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Global electrostatic potential structures of merging flux tubes in TS-U torus plasma merging experiment[1] ASUKA SAWADA, HIRONORI HATANO, MOE AKIMITSU, QINGHONG CAO, KOTARO YAMASAKI, HIROSHI TANABE, YASUSHI ONO, Graduate School of Frontier Sciences, University of Tokyo, TS-GROUP TEAM — We have been investigating 2D potential profile of global merging tokamaks to solve high-power heating of magnetic reconnection in TS-3 and TS-3U (ST, FRC:R=0.2m, 1985-, 2017-) and TS-4 (ST, FRC:R=0.5m, 2000-), UTST (ST:R=0.45m, 2008-) and MAST (ST:R= 0.9m, 2000-) devices. These experiments made clear that the electrostatic potential well is formed not only in the downstream area of magnetic reconnection but also in the whole common (reconnected) flux area of two merging flux tubes: tokamak plasmas. This fact suggests that the ion acceleration/heating occurs in much wider region than the reconnection downstream. We studied how the potential structure depends on key reconnection parameters:guide toroidal field and plasma collisionality. We found the polarity of the guide toroidal field determines those of potential hills and wells, indicating their formation is affected by the Hall effect. The peak value of the electrostatic potential well decreased with gas pressure increasing, suggesting plasma collisionality suppresses the Hall effect. The relationship between the electrostatic potential structure and anomalous ion heating is being studied as a possible cause for the high-power heating of fast magnetic reconnection.

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