

Abstract Submitted  
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**Multipoint spectroscopy measurement of spherical tokamak heating by plasma merging method in UTST** SHUJI KAMIO, QINGHONG CAO, KEITA ABE, MORIO SAKUMURA, NAOTO SUZUKI, TAKENORI WATANABE, The University of Tokyo, KOJI ISHIGUCHI, The Open University of Japan, RYOTA IMAZAWA, Japan Atomic Energy Agency, TAKUMA YAMADA, MICHIAKI INOMOTO, YUICHI TAKASE, YASUSHI ONO, The University of Tokyo — Temporal evolutions of ion temperature/flow were observed to investigate the heating effect of the plasma merging in the UTST device by using a multipoint Doppler spectroscopy measurement system. The bulk plasma ion temperature measured by carbon impurity line was about 15-25 eV after the plasma merging, indicating that the ion heating was not significant in the present experimental condition. However, anomalous rise in the carbon line width was observed in the early phase of the plasma merging. Since the carbon impurity emission comes from the X point and also from the vicinity of the center stack, we assumed that the broadened spectrum contains the radially bi-directional outflow component near the X point and the stationary component near the center stack. The estimated outflow velocity from the spectroscopy was about 24 km/s, which showed good agreement with the Alfvén velocity of 22 km/s and the velocity of the reconnected field line motion of 35 km/s.

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