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Intrinsic Rotation and Torque in NSTX Ohmic H-mode Plasmas JONG-KYU PARK, RONALD BELL, STANLEY KAYE, WAYNE SOLOMON, BENOIT LE BLANC, AHMED DIALLO, JONATHAN MENARD, Princeton Plasma Physics Laboratory, SHIGEYUKI KOBOTA, University of California in Los Angeles, NSTX RESEARCH TEAM — Intrinsic rotation and torque in the co-Ip direction have been observed and investigated in NSTX ohmic plasmas, by utilizing passive views of CHERS diagnostics. Particularly the focus was placed on ohmic L-H transition to minimize the effects by other momentum exchange and sources. The analysis showed that the NTV torque by intrinsic error fields is also ignorable in ohmic plasmas due to the weak plasma response and the high collisionality. The increase of the intrinsic rotation in the edge is well correlated with ion temperature gradient change, compared with much weaker correlations with electron temperature or density gradient change. This is consistent with a corresponding theory of residual stress, and the measured rotation and torque could be directly compared with the theoretical prediction using the diffusivity as a free parameter. However, an uncertainty on the order of diamagnetic rotation exists in many places across measurement and theory, as well be discussed in details in the presentation. This work was supported by the US DOE Contract #DE-AC02-09CH11466.

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