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## Effects of Localized Neoclassical Toroidal Viscosity Effects on the Toroidal Rotation Profile in KSTAR

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KSTAR provides a great environment to carry out the NTV study in that the intrinsic error fields and the toroidal field ripples are very small in magnitude, and asymmetric magnetic fields can be added by the in-vessel coil current on demand. In this paper, we report both theoretical and experimental studies on NTV in KSTAR. It is shown that the radial transport of the toroidal angular momentum,  $\Gamma_{\phi}$ , is also proportional to the first order of gyro-radius. In this work, we introduce a different method of the NTV torque estimation, that includes the usual toroidal angular momentum transport besides the NTV torque. It may resolve some known discrepancies between theories and experiments and reveal unknown puzzles at the same time. We show that the inherent neoclassical toroidal viscosity induced by the intrinsic error fields and toroidal field ripple in KSTAR is small enough not to deform the pedestal structure in toroidal rotation profiles, always observed uniquely in H-mode KSTAR plasmas.

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