

Abstract Submitted
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Internal transport barriers in NSTX reversed-shear plasmas¹

HOWARD YUH, F.M. LEVINTON, Nova Photonics, R.E. BELL, J.C. HOSEA, B.P. LEBLANC, D.R. SMITH, E. MAZZUCATO, H.K. PARK, S.M. KAYE, PPPL, S. KUBOTA, UCLA — Simultaneous internal transport barriers in both ion and electron channels have been observed in reversed shear ($dq/dr < 0$) discharges on NSTX. While these ITBs can be observed in discharges with only neutral beam heating, a HHFW (high-harmonic fast wave) RF power scan was performed at constant beam input power to scan the electron temperature gradient. Measurements show that the electron and ion transport barriers can be at different minor radii, suggesting different mechanisms for the suppression of ion and electron turbulence. Examination of the roles of magnetic and velocity shears with respect to ion and electron transport is possible through the use of CHERS and the newly upgraded 16 channel NSTX MSE diagnostic which now provides full coverage from the outboard plasma edge to past the magnetic axis with 3-4 cm resolution. Additional measurements from these well diagnosed plasmas, including Thomson scattering, X-ray diodes, reflectometry, and high-k fluctuations, will be examined in addition to results from TRANSP and GS2 linear simulations.

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