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Experimental observations of inward particle transport in a linear machine LANG CUI, GEORGE TYNAN, CHRISTIAN BRANDT, SAIKAT CHAKRABORTY THAKUR, RONGJIE HONG, MIN XU, None — Experiments in various tokamak devices (AUG, DIII-D, JET, TCV, TEXTOR) have indicated the existence of an anomalous inward particle transport. Recently, such an anomalous particle transport has been unambiguously identified in the Controlled Shear Decorrelation Experiment (CSDX) linear plasma machine. A detailed description of experimental results from both Langmuir probes measurements and fast imaging camera measurements is presented, which gives direct evidence that the fluctuation-driven particle flux changes from outward flow to inward flow across the transition from low to high confinement mode. Experimental results suggest that the radial reversal of turbulent particle flux can be externally controlled by generating regions in the plasma where there is a strong velocity shear. Studies of turbulent transport in CSDX show that the phase shift between turbulent particle flux and velocity shear plays a key role in a suppression and apparent reversal of turbulent particle flux with the confinement transition.

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None

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