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Initial results from the Controlled Shear Decorrelation eXperiment - Upgrade (CSDX-U) SAIKAT CHAKRABORTY THAKUR, TY LEE, MIN XU, LANG CUI, PETER MANZ, NICOLAS FEDORCZAK, CHRIS HOLLAND, GEORGE TYNAN, Univ. of California at San Diego, CSDX TEAM — Controlled Shear De-correlation eXperiment (CSDX) is a linear plasma device dedicated to studies of drift wave turbulence zonal flow interaction and generation of intrinsic rotation in a simple plasma configuration. Previous studies in argon plasma, with a 13.56 MHz, 1.5 kW, 10 cm diameter RF helicon source, immersed in 1 kG magnetic field, demonstrated existence of a turbulence driven azimuthally symmetric radially sheared plasma flow (i.e., a zonal flow). To better understand the underlying mechanism of the emission, propagation and absorption of drift wave packets into the zonal shear layer, the machine has been upgraded. The upgrade includes a larger (15 cm diameter) helicon source, larger RF power (up to 5 kW) and larger magnetic field (up to 2.4 kG) to be used with lighter gases (neon, helium and hydrogen). Diagnostics include Langmuir probe arrays, optical emission spectroscopy and fast framing camera. Initial measurements of the radial profiles of density and potential fluctuations, Reynold's stresses and other time averaged plasma parameters will be shown.

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