

Abstract Submitted
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Multiple helicon source operation on Alpha CHRISTOPHER WATTS, University of New Mexico — Helicon sources have been shown to be extremely efficient at generating high-density, albeit cold, plasmas. However, the density of plasma scales inversely with the radius of the source, and large area sources have generated only modest densities, $\sim 10^{18} \text{ m}^{-3}$ peak. To overcome this limitation we have built a multi-source helicon array in an effort to make a large area, high density plasma. Alpha, Articulated Large-area Plasma Helicon Array, consists of a 4 m long, 0.5 m diameter chamber surrounded by 13 circular magnetic field coils creating a maximum value of 0.2 T on axis. Seven 13 cm diameter helicon antennae act as a single source creating a 40 cm diameter plasma. The helicon array can operate in one of two modes, creating either seven distinct plasma columns (to be used for turbulence and wave spreading studies) or an integrated uniform large diameter plasma column.

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