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Cost-effective containment of unmagnetized argon plasma using a magnetic bucket and a helicon source[1] MIGUEL HENRIQUEZ, M. UMAIR SIDDIQUI, EARL SCIME, West Virginia Univeristy — We demonstrate highly-ionized and unmagnetized plasma production in the low-power Compact HElicon for Waves and Instabilities Experiment (CHEWIE) at West Virginia University. To achieve this, the argon helicon is injected plasma into a multidipole-confined expansion chamber. Using Langmuir probes and optical emission spectroscopy, we calculate ionization fractions in the unmagnetized volume as a function of input power and fill pressures. Finally, we investigate the ionization efficiency power scaling to determine if helicons are cost-efficient plasma sources for larger highly-ionized, unmagnetized plasma experiments.

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