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Optical diagnostics in the MOCHI LabJet experiment ALEXANDER CARD, KEON VEREEN, CHRIS CRETEL, SETTHIVOINE YOU, Univ of Washington — The MOCHI LabJet experiment is designed to observe the dynamics of canonical flux tubes and measure the conversion of magnetic helicity into ion flow helicity. In addition to magnetic probes capable of measuring 3D magnetic fields, Ion Doppler spectroscopy will reconstruct 3D flow fields from computed vector tomography of line-integrated ion Doppler measurements. About 500 collimated lines-of-sight are distributed into 64 viewports regularly arranged around the 1.4m diameter spherical vacuum chamber. The custom fiber-bundles are arranged into a 2D array and coupled to a 1m focal length Czerny-Turner monochromator with custom matching optics. The spectral light is recorded with a dual-frame 1024x1024 intensified CCD camera with a 2 μs phosphor decay time capable of taking two measurements in a single plasma shot. A Mach-Zehnder HeNe interferometerer with unequal path lengths is also under construction for line-integrated plasma density measurements. This work is supported by US DOE Grant DE-SC0010340.

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