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Survey of Accelerator-Region Density on CTIX using Laser Deflectometry SAMUEL BROCKINGTON, DAVID HWANG, ROBERT HORTON, STEPHEN HOWARD, RUSSELL EVANS, BEI WANG, University of California Davis, Davis, California, ELIZABETH MERRITT, Mount Holyoke College, South Hadley, MA — Recent experiments have demonstrated that accelerator-region gas puffing increases the plasma density of compact toroids (CTs) created by the Compact Toroid Injection Experiment (CTIX). CT velocity can be determined from time of arrival measurements of optical and magnetic signals. To determine total CT mass a plasma density profile must be assumed or measured using either heterodyne interferometers or, especially in higher density plasmas, by the newer and simpler technique of laser deflectometry. In high density plasma, axial deflectometry provides absolute plasma density without an assumption of a radial profile. CT kinetic energy can then be calculated from measurements of plasma density and velocity. We will use this new system to determine CT kinetic energy as a function of accelerator input energy.

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