

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Spectroscopy of High Velocity Compact Toroids on CTIX¹ NICK JUNGWIRTH, Arizona State University, ROBERT HORTON, RUTH KLAUSER, DAVID HWANG, University of California, Davis — High density toroidal plasmas can reach speeds exceeding 200 km/s using coaxial accelerators such as CTIX at UC Davis. Applications of these compact toroids (CTs) include the fueling of next generation tokamaks and stellarators. An important CT diagnostic is to monitor atomic line radiation from CT ions. In this investigation we develop a reliable method of measuring a broad range (40 nm) of the CT spectrum from multiple positions. Our system employs fiber-optic cables to transmit the signal to a spectrometer operating in the 300-1300 nm range. A gated, intensified, CCD camera surveys the CT emission spectrum at a fixed time over a range of wavelengths. Additionally, a photomultiplier is used to investigate the time dependence of particular wavelengths of interest (monochrometer mode). Such measurements enable the study of CT temperature, density, impurity content, and CT velocity. The fiber-optic system will first be used to survey the emission spectrum of CTIX in typical operation, and to identify candidate lines for monochrometer operation.

¹This work supported by U.S. DOE Grant DE-FG02-03ER54732.

Nick Jungwirth
Arizona State University

Date submitted: 15 Jul 2010

Electronic form version 1.4