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An Ultraviolet Survey of the Compact Toroid Injection Experiment[1] ELIZABETH MERRITT, Mount Holyoke College, STEPHEN HOWARD, ROBERT HORTON, DAVID Q. HWANG, RUSSELL EVANS, SAMUEL BROCKINGTON, University of Cailfornia at Davis, PETER BEIERSDORFER, Lawrence Livermore National Laboratory — Light is emitted during the formation and acceleration of a compact toroid (CT) plasma in the Compact Toroid Injection Experiment (CTIX). A low-resolution (35nm) survey in the 150 to 500 nm range of the ultraviolet spectrum of this light will be taken using a 1-meter Acton spectrometer using a 300 line/mm grating, on loan from the Electron-Beam Ion-Trap group at LLNL, with a 16-channel linear photodiode array. This survey will allow bright regions of the emitted spectrum to be identified for various diagnostic purposes. At moderate spectrometer resolution, line intensities may be used to infer plasma impurity content, while line ratios may be used to infer plasma temperatures. At high resolution, axial plasma velocity can be determined using Doppler shifts, while plasma temperature can be determined using Doppler broadening. Higher resolution experiments will be completed if time allows or continued by a future student.

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