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Spectroscopic Analysis of High Intensity Laser Beam Jets Interaction Experiments on the Leopard Laser at UNR[1] E.E. PETKOV, M.E. WELLER, V.L. KANTSYREV, A.S. SAFRONOVA, J.J. MOSCHELLA, I. SHRESTHA, V.V. SHLYAPSTEVA, A. STAFFORD, S.F. KEIM, University of Nevada Reno, UNIVERSITY OF NEVADA RENO TEAM — Results of Ar gas-puff experiments performed on the high power Leopard laser at UNR are presented. Flux density of laser radiation in focal spot was up to 2x10^{16} W/cm^2 (pulse duration was 0.8 ns and laser wavelength was 1.057 μm). Specifically, spectroscopic analysis of K-shell Ar spectra are investigated and compared as functions of the orientation of the laser beam to linear gas jet. The laser beam axis was positioned either along the jet plane or orthogonal to it at a distance of 1 mm from the nozzle output. The diagnostics used included a time-integrated x-ray spectrometer along with a set of filtered Si diodes with various cutoff energies. In order to identify lines, a non-local thermodynamic equilibrium (non-LTE) kinetic model was utilized and was also used to determine plasma parameters such as electron temperature and density. The importance of the spectroscopic study of high intensity laser beam-jets interaction experiments is discussed.

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