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X-ray polarization spectroscopy to study energy transport in laser produced plasma at 10^{18} W/cm^2 H. NISHIMURA, Y. INUBUSHI, Y. OKANO, S. FUJIOKA, T. KAI, ILE, Osaka U., T. KAWAMURA, Tokyo Inst. Tech., D. BATANI, A. MORACE, R. REDAELLI, U. of Milan, Bicocca, C. FOURMENT, J. SANTOS, CELIA, U. Bordeaux 1, G. MALKA, CENBG, U. Bordeaux 1, A. BOSCHERON, CEA/CESTA Le BARP, A. CASNER, CEA-DAM Ile de France, M. KOENIG, LULI, T. NAKAMURA, T. JOHZAKI, H. NAGATOMO, K. MIMA, ILE, Osaka U. — In ultra-high intensity laser produced plasma, velocity distribution function (VDF) of hot electrons is highly anisotropic while that of cold electrons in the bulk plasma is isotropic. X-ray polarization spectroscopy has been used to measure directly VDF of hot electrons in the plasma at 10^{17} W/cm^2 [1, 2]. A new measurement was made at 10^{18} W/cm^2 using Alisé facility at CEA/CESTA. Chlorinated triple-layer targets were irradiated and Cl Heα line was observed with an x-ray polarization spectrometer. Experimental results and comparison with the model prediction will be discussed using a time-dependent atomic kinetics code for polarized Cl Heα radiation [3].
[1] H. Nishimura, et al., *Plasma Phys. Cont. Fusion* **47**, B823 (2005).
[2] Y. Inubushi, et al., JQSRT **99**, 305 (2006); *Phys. Rev.* **E 75**, 026401 (2007).
[3] T.Kai, et al., *Phys. Rev* **A 75**, 012703 (2007), T. Kawamura, et al., submitted.

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