Momentum distribution of multiply charged ions ionized by intense lasers K. I. DIMITRIOU, S. YOSHIDA, J. BURGDÖRFER, Vienna University of Technology, H. SHIMADA, Y. YAMAZAKI, University of Tokyo, Riken — The analysis of the momentum distribution of multiply charged ions ionized by intense laser field ($\sim 100\mathrm{PW/cm}^2$) is presented. Due to a spatial variation of the laser intensity, ions with different charge states are produced during a single laser shot. The measurements show a remarkably simple linear relation between the width of the momentum distributions and the ionization potential of the ions. This scaling appears to be universal, i.e. independent of the target atoms used. We show that the linear scaling can be explained by the semiclassical theory and discuss the effect of laser envelope in the ionization process.

Shuhei Yoshida

Date submitted: 26 Jan 2006   Electronic form version 1.4