

Abstract Submitted
for the MAS16 Meeting of
The American Physical Society

Fabrication of MeV electron spectrometer in light-matter interactions¹ SIYU LUO, SAM HUGHES, PATRICK GRUGEN, SHARAA ALQARNI, BARRY WALKER, university of Delaware — We describe the fabrication of an electron spectrometer for ultrahigh intensity laser interactions with individual atoms and molecules. The spectrometer consists of a main ultra-high vacuum(UHV) chamber, a turn table and a magnetic deflection spectrometer with electromagnets in UHV. The main chamber is pumped using turbomolecular pumps. The 0.6m diameter turn table is a two-layer design with the bottom layer fix onto the main chamber and the top layer coupling with the bottom layer with two grooves and stainless steel ball bearings. Each electromagnet is composed by a 0.1m diameter aluminum solenoid and 12 layers of 28-gauge polyimide coated copper wire. The electromagnets are house within custom UHV chambers cooled by deionized water. Electrons are detected by using a matched-set microchannel plate(MCP) detector set up in a high gain Chevron configuration. We present the electron calibration using Carbon-14 radioactive sources.

¹NSF PHYS31262

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Date submitted: 02 Oct 2016

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