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Magnetic-bottle electron spectrometer for measuring 25 as pulses[1] QI ZHANG, KUN ZHAO, ZENGHU CHANG, Kansas State University, JRM LAB TEAM — The duration of attosecond pulses is usually retrieved from streaked photoelectron energy spectra produced by XUV pulses. To resolve pre- or post-pulses, the resolution of the spectrometer should be better than 0.5 eV. A magnetic-bottle electron time-of-flight spectrometer (MBEES) is under development for such measurements. Simion simulation of the time of flight of the photoelectron in MBEES showed that in order to achieve the 0.5 eV resolution, a temporal resolution of 250 ps or less is required for the microchannel plate (MCP) and the data acquisition system (DAQ). Experimentally, the resolution was measured with 3^{rd} harmonic photons produced by a 25fs, 800nm laser in air. The nominal resolutions of the MCP and the detection system (MCP plus DAQ) were found to be 170 and 200 ps, respectively. This result indicated that the requirement to retrieve a 25 as pulse can be met by our MBEES including MCP and DAQ.

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