Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Even-parity resonances with synchrotron radiation from Laser Excited Lithium at $1s^2 2p$ State MING-TIE HUANG, Department of Physics, Saginaw Valley State University, RALF WEHLITZ, Synchrtron Radiation Center, University of Wisconsin — Correlated many-body dynamics is still one of the unsolved fundamental problems in physics. Such correlation effects can be most clearly studied in processes involving single atoms for their simplicity.Lithium, being the simplest open shell atom, has been under a lot of study. Most of the studies focused on ground state lithium. However, only odd parity resonances can be populated through single photon (synchrotron radiation) absorption from ground state lithium ($1s^2 2s$). Lithium atoms, after being laser excited to the $1s^2 2p$ state, allow the study of even parity resonances. We have measured some of the even parity resonances of lithium for resonant energies below 64 eV. A single-mode diode laser is used to excite lithium from $1s^2 2s$ ground state to $1s^2 2p$ ($^2P_{3/2}$) state. Photoions resulting from the interaction between the excited lithium and synchrotron radiation were analyzed and collected by an ion time-of-flight (TOF) spectrometer with a Z- stack channel plate detector. The Li^+ ion yield was recorded while scanning the undulator along with the monochromator. The energy scans have been analyzed regarding resonance energies and parameters of the Fano profiles. Our results for the observed resonances will be presented.

Ming-Tie Huang
Department of Physics, Saginaw Valley State University

Date submitted: 30 Mar 2010 Electronic form version 1.4