Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Relativistic effects in the photoelectron dynamics of Z=118[1]
JOBIN JOSE, IIT-Patma, PRANAWA DESHMUKH, IIT-Tirupati, AHMAD RAZAVI, REZVAN HOSEYNI, DAVID KEATING, STEVEN MANSON, Georgia State University — High-Z atoms are excellent laboratories to study the combination of relativistic and many-electron correlation effects in their electronic structure and dynamics. Radioactive Z=118 is very difficult to study experimentally, but. there are theoretical studies [1,2]. In the present work, the relativistic-random-phase approximation (RRPA) [3] at different levels of truncation is employed to explore the final-state correlation effects in the photoelectron dynamics of Z=118 to illustrate the relativistic effects resulting from coupling different photoionization channels arising from spin-orbit split subshells, termed the spin-orbit interaction activated interchannel coupling (SOIAIC) effect [4,5]. Coupling of channels arising from spin-orbit split subshells can cause significant changes in the energy dependence of the photoionization parameters in the near-threshold region. Comparison between photoelectron dynamics of Rn on a qualitative level is also carried out in this work, since Z=118 is a homologue of Rn with regard to photoionization dynamics. Photoelectron dynamics of 7p, 7s and 6d subshells are investigated and comparison between Z=118 and Rn is made. [1] V. Pershina *et al*, J. Chem. Phys. **129,** 144106 (2008); [2] E. Eliav E *et al*, Phys. Rev. Lett. **77**, 5350 (1996); [3] W. R. Johnson and C. D. Lin, Phys. Rev. A **20**, 964 977 (1979); [4] M. Ya. Amusia *et al*, Phys. Rev. Lett. **88**, 093002 (2002); [5] S. S. Kumar *et al*, Phys. Rev. A **79**, 043401 (2009).

[1]Work supported by DOE, Office of Science

Steven Manson
Georgia State University

Date submitted: 28 Jan 2020 Electronic form version 1.4