

Abstract Submitted
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Relativistic effects in the photoelectron angular distribution of s -states of superheavy elements¹ JOBIN JOSE, IIT-Patna, PRANAWA DESHMUKH, IIT-Tirupati, AHMAD RAZAVI, REZVAN HOSEYNI, DAVID KEATING, STEVEN MANSON, Georgia State University — The influence of relativistic effects on the electronic structure of heavy and superheavy atoms has been discussed [1,2]. However, the effect of relativity on photoionization dynamics from these elements is seldom studied. The angular distribution of photoelectrons is known to be sensitive to relativistic effects [3]. In the present work, the relativistic-random-phase approximation (RRPA) [4] at different levels of truncation is employed to find the relativistic and correlation effects in the angular distribution of photoionization from ns subshells of superheavy elements up to $Z=118$. We find that relativistic interactions in the final continuum states are strong enough to engender a substantial of the value of the dipole angular distribution β parameter from its non-relativistic value of 2. $Z=118$ is a homologue of Rn and a qualitative comparison is made with photoelectron angular distribution of Rn [7], in which the relativistic effects are smaller relative to $Z=118$. [1] P. Pykko, *Adv. Chern. Res.* **11**, 353 (1978); [2] *Relativistic Effects in Atoms, Molecules, and Solids*, edited by G. L. Malli (Plenum, New York, 1983); [3] S. T. Manson and A. F. Starace, *Rev. Mod. Phys.* **54**, 389 (1982); [4] W. R. Johnson and C. D. Lin, *Phys. Rev. A* **20**, 964 (1979); [5] V. Pershina *et al*, *J. Chem. Phys.* **129**, 144106 (2008); [6] E. Eliav *et al*, *Phys. Rev. Lett.* **77**, 5350 (1996); P. C. Deshmukh, V. Radojevic, and S. T. Manson, *Phys. Rev. A* **45**, 6339 (1992).

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