QED effects in heavy atoms

L. N. Labzowsky

Institute of Physics, St. Petersburg State University, Russia

The influence of Quantum Electrodynamical (QED) effects on the properties of heavy atoms is discussed. The electron self-energy (SE) correction is evaluated for a single valence ns electron with n up to eight and the nuclear charge Z up to 119. Various Dirac-Slater one-electron potentials with extended nuclei were used. The vacuum polarization (VP) contributions were calculated as the average values of the Uehling potential. The Lamb shift values *i.e.* SE+VP contributions reach about 0.5% for the heaviest ns elements. The bound-state QED corrections to g-factors are evaluated for ns valence electrons in K, Rb, Cs, Ba+ and Fr. It was found that these corrections contribute at the level of 2% for K, 10% for Rb, 2% for Cs and 0.4% for Fr. Thus these corrections should be taken into account in the comparison with experimental data.