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Atomic Properties of Superheavy Elements No, Lr, and Rf MARIANNA SAFRONOVA, University of Delaware, VLADIMIR DZUBA, UNSW, ULYANA SAFRONOVA, University of Nevada, Reno — The study of the superheavy elements (nuclear charge $Z > 100$) is an important multidisciplinary area of research involving nuclear and atomic physics and chemistry. Atomic calculations help to understand the role of the relativistic and many-body effects and provide important information for the planning and interpreting the measurements. The need to treat relativistic and correlation effects to high level of accuracy makes the calculations a very challenging task. In this work, the combination of the configuration interaction technique and all-order linearized coupled-cluster method is used to calculate excitation energies, ionization potentials, and static dipole polarizabilities of superheavy elements nobelium, lawrencium and rutherfordium. Breit and QED corrections are also included. The same calculations are carried out for similar but lighter elements Hf, Lu, and Yb where experimental data are available to test the accuracy of the calculations.

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