Thematic Section: Theoretical and Computer Chemistry. **Full Paper**
Subsection: Theory of the Structure of Matter. *Registration Code of Publication:* 11-28-18-1
Publication is available for discussion in the framework of the on-line Internet conference "*Butlerov readings*".
http://butlerov.com/readings/
Contributed: October 20, 2011.

Modeling of the electronic structure of alkali-metal atoms

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Keywords*: alkali metals, model, electronic structure, theory.*

Abstract

We analyze the electronic structure of atoms in group I of the periodic table by simulation of the basic planetary Rutherford-Bohr model. According to this model, the valence electron in an elliptical orbit is drawn in the central field of the positively charged core. Such reduction of multipartial problems of many-electron atoms to the two-partial problem is based on the application of Gauss' theorem. In the accepted model the alkali metal atoms are hydrogen-like and the equation of electron motion is solved in the framework of the Kepler problem.