Corrections of the spectral lines position in multielectron ions

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Modern spectroscopy has achieved high precision. A large array of experimental data on the plasma emission spectra of various substances has been accumulated. Modeling experiments requires increasingly accurate physical and mathematical models to describe plasma emission spectra. In multielectron ions, the position of spectral lines is influenced by spin-orbit interaction and interaction between configurations [1]. These effects was taken into account in the THERMOS software package, developed at the KIAM RAS [2]. The calculations use the intermediate type coupling based on relativistic wave functions [3].

The results obtained for some substances were compared with experimental measurements and calculation results using other codes.

Calculations were performed on the hybrid supercomputer K-100 installed in the Supercomputer Centre of Collective Usage of KIAM RAS and MVS-10P JSCC RAS.

[1] Rudzikas Z B, Nikitin A A and Kholtygin A F 1990 *Theoretical Atomic Spectroscopy. Handbook for Astronomers and Physicists (in Russian)* (Leningrad: Leningrad Univ. Press)

[2] Vichev I, Kim D, Solomyannaya A, Grushin A and Iartsev B 2021 Calculation of the position of spectral lines in the intermediate coupling approximation taking into account the interaction of configurations

[3] Condon E and Shortley G 1935 *The Theory of Atomic Spectra* Cambridge Univ.Pr.209 (Cambridge University Press)