Supervisor reference
on the bachelor thesis
of Anastasia Vladimirova
4th year student
division of quantum mechanics

The bachelor thesis of Anastasia Vladimirova is devoted to the evaluation of the first and second-order corrections for the electron-electron interaction in two- and three-electron molecular ions. The calculations are performed both in the framework of the rigorous QED approach, and in the Breit approximation. The monopole approximation is used for the two-center potential, which allows one to apply the previously developed numerical procedures. Formulae for the contributions of one-photon and two-photon exchange diagrams are derived within the framework of the two-time Green's function method.

High-precision calculations of energy levels in heavy molecular ions are of great importance for the interpretation of experimental data on quasimolecular radiation in collisions of heavy ions. The goal of such experiments is to observe the process of spontaneous electron-positron pair production in the supercritical field of two heavy nuclei.

Anastasia Vladimirova has been working in my group for a year and a half. She successfully solves all the tasks set, showing independence and purposefulness. The article with the results obtained in this work is currently being prepared for publication. The first results were already presented at the "Science and Progress" conference. I believe that this work deserves the excellent mark, and I strongly recommend Anastasia Vladimirova to continue study for MSc degree.

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Dr. Dmitry A. Glazov

associate professor