Contribution ID: **54** Type: **poster**

The study of energy spectrum of the homonuclear quasi-molecules in the critical region

Monday, 19 September 2016 18:00 (2 hours)

In the present work critical distances for homonuclear quasi-molecules are calculated for a range of point-like and extended nuclei with 85 < Z < 100. High-precision relativistic calculations of the ground-state energy of molecular ions with charges Z = 1, 2, 10, 20, 30, 40, 50, 60, 70, 80, 90, 92, 100 at “chemical distances”R = 2/Z (in a.u.) were executed. To solve the two-centered Dirac equation the Dirac-Fock-Sturm method, based on the Dirac-Sturm orbitals application for constructing Dirac wave functions is used. According to this method wave functions represent a set of Dirac-Sturm basic functions, which are central-field 4-component Dirac bispinors centred at the
ions. The radial parts of these orbitals are obtained by solving numerically the finite-difference radial one-center Dirac and Dirac-Sturm equations.

Primary author: MIRONOVA, Darya (St. Petersburg State University)

Co-authors: Prof. PLUNIEN, Gunter (Institut fur Theoretische Physik, Technische Universitat Dresden); Prof. TUPITSYN, Ilya (St.Petersburg State University); SHABAEV, Vladimir (GSI, Darmstadt)

Presenter: MIRONOVA, Darya (St. Petersburg State University)

Session Classification: Poster Session and Coffee