Contribution ID: **82** Type: **not specified**

Relativistic Coulomb-Breit and QED calculations in heavy quasi-molecules

Monday, 19 September 2016 17:35 (25 minutes)

The ab initio Lamb shift calculations can be performed only for few-electron atomic systems such as H-like, He-like and Li-Like ions and for many-electron atoms in local density approximation (LDA). For this reason the construction of simple one-electron approach to one-loop QED operator is an important task of the relativistic quantum theory of atoms and molecules described by the Dirac-Breit-Coulomb Hamiltonian.

In this work we used the model QED potential [1,2] approach to
calculations of the Lamb shift in few-electron quasi-molecules.
In particular model QED potential is applied to calculate Lamb shift in the U^{91+}-U^{92+} dimer. The obtained results are compared with the data of {\it ab initio} calculations [3].
%
[1] V.M. Shabaev, I.I. Tupitsyn, and V.A. Yerokhin, Phys.~Rev.~A v. 88, 012513 (2013).
[2] I.I. Tupitsyn and E.V. Berseneva, Optics and Spectroscopy v.114, 682, (2013).
[3] A.N. Artemyev and A. Surzhykov, Phys.Rev.Lett. v.114, 243004 (2015).

Primary author: TUPITSYN, Ilya (St.Petersburg State University)

Co-authors: MIRONOVA, Darya (St. Petersburg State University); SHABAEV, Vladimir (GSI, Darmstadt)

Presenters: MIRONOVA, Darya (St. Petersburg State University); TUPITSYN, Ilya (St.Petersburg State University); SHABAEV, Vladimir (GSI, Darmstadt)

Session Classification: Theory