



Contribution ID: 6

Type: **Poster**

QED approach of valence-hole excitations in closed shell systems

Monday, 18 July 2022 16:35 (1h 25m)

An ab initio QED approach to treat a valence-hole excitation in closed shell systems is developed in the framework of the two-time-Green function method. The derivation considers a redefinition of the vacuum state and its excitation as a valence-hole pair. The proper two-time Green function, whose spectral representation confirms the poles at valence-hole excitation energies is proposed. An contour integral formula which connects the energy corrections and the Green function is also presented. First-order corrections to the valence-hole excitation energy involving self-energy, vacuum polarization, and one-photon-exchange terms are explicitly derived in the redefined vacuum picture. Reduction to the usual vacuum electron propagators is given that agrees in the Breit approximation with the many-body perturbation theory expressions for the valence-hole excitation energy.

Primary author: SOGUEL, Romain (Helmholtz Institute Jena)

Co-authors: VOLOTKA, Andrey (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI)); Prof. FRITZSCHE, Stephan (Helmholtz Institut Jena)

Presenter: SOGUEL, Romain (Helmholtz Institute Jena)

Session Classification: Session 4