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Three-dimensional statistical reduction of the non-relativstic Schrödinger equation for electrons with pair-wise Coulomb interactions[1]

BOYAN OBRESHKOV, Arkansas University, Fayetteville, AR 72701, USA — Based on Ritz variational principle, we reduce in statistical fashion the non-relativistic N-body Schrödinger equation for electrons with Coulomb interactions to a three-dimensional wave-equation for the motion of one electron with the residual $N-1$ electrons acting spectators of its motion [1]. As a consequence the Pauli's exclusion principle is interpreted as dynamical principle. Analytic solutions of the all electron quantal equations for the ground and excited states of the helium and lithium iso-electronic sequences will be represented and the comparison with the experimental measurements for the ground-state ionization potentials of atoms shown.
[1] B. D. Obreshkov , Phys. Rev. A **78**, 032503 (2008).

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