

Abstract Submitted
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Quantization of Differences Between Atomic and Nuclear Rest Masses and Self-organization of Atoms and Nuclei F.A. GAREEV, I.E. ZHIDKOVA, Joint Institute for Nuclear Research, Dubna, Russia — We come to the conclusion that all atomic models based on either the Newton equation and the Kepler laws, or the Maxwell equations, or the Schrodinger and Dirac equations are in reasonable agreement with experimental data. We can only suspect that these equations are grounded on the same fundamental principle(s) which is (are) not known or these equations can be transformed into each other. We proposed a new mechanism of LENR: cooperative processes in the whole system nuclei + atoms + condensed matter - nuclear reactions in plasma - can occur at smaller threshold energies than the corresponding ones on free constituents. We were able to quantize¹ phenomenologically the first time the differences between atomic and nuclear rest masses by the formula: $\delta\delta M = n_1/n_2 \times 0.0076294$ (in MeV/ c^2), $n_i=1,2,3,\dots$. Note that this quantization rule is justified for atoms and nuclei with different A, N and Z and the nuclei and atoms represent a coherent synchronized systems - a complex of coupled oscillators (resonators). The cooperative resonance synchronization mechanisms can explain how electron volt (atomic-) scale processes can induce and control nuclear MeV (nuclear-) scale processes and reactions.,

¹F.A. Gareev, I.E. Zhidkova, E-print arXiv Nucl-th/ 0610002 2006.

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