NEW DISCOVERY: QUANTIZATION OF ATOMIC AND NUCLEAR REST MASS DIFFERENCES

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ABSTRACT

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 quantize [1] phenomenologically the first time the differences between atomic and nuclear rest masses by the formula: $\Delta\Delta M = \frac{n_1}{n_2} \cdot 0.0076294$ (in MeV/c^2), $n_i = 1,2,3,...$ 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 open systems - a complex of coupled oscillators (resonators). The cooperative resonance synchronization mechanisms are responsible for explanation of how the electron volt world can influence on the nuclear mega electron volt world. It means that we created new possibilities for inducing and controlling nuclear reactions by atomic processes grounded on the fundamental low of physics – conservation law of energy.

The results of these research fields can provide new ecologically pure mobile sources of energy independent from oil, gas and coal, new substances, and technologies. For example, this discovery gives us a simple and cheep method for utilization of nuclear waste.

References

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