On the possibility of nuclear transformation in low-temperature plasma from the viewpoint of conservation laws

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The potentiality of a hypothetical collective process of low-energy nuclear transformations is shown to be compatible with the known fundamental conservation laws. The possibility of such processes was suggested by the results of the experiments on the electric explosion of metallic foils in liquids. It is also shown, that while considering the nuclear processes — both known and novel ones — which proceed with participation of weak interactions, one has to take into account the mass of electron in spite of its smallness in comparison with the nuclear binding energy. Within the frame of the respectively enhanced accuracy, it is shown that the condition of nuclear stability with respect to β-decay and K-capture appears to be the minimum of mass defect on isobars, that not always coincides with the widespread condition of the minimum of nuclear mass.

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