

Abstract Submitted
for the SHOCK09 Meeting of
The American Physical Society

Formation and Evolution of a Nonstationary Bounded Self-Governing Electron-Nucleus Collapse in Condensed Targets VLADIMIR VYSOTSKII, Kiev National Shevchenko University, STANISLAV ADAMENKO, Kiev Electrodynamics Laboratory Proton-21 — We considered peculiarities of the evolution of a region with sharp boundaries that is filled with partially ionized thin spherical layer and is a part of condensed target. The creation of such region can be related to action of impulse electron driver. We defined the conditions such that their fulfilment during the establishment of the equilibrium between the Coulomb attraction of electrons and ions with atom ionization multiplicity Z_1 and the kinetic pressure of electrons causes both the compression of this region and its ionization to the state with $Z_2 > Z_1$. The last leads to further additional compression and ionization. We showed that such avalanche-like ionization and the self-compression of the target happen in the case when the thin spherical ionized layer inside condensed target has drift momentum. Such mechanism can explain the formation of collapse zone and creation of superheavy nuclei observed in “Proton-21” Lab [1-3].
1. Adamenko S. V., Vysotskii V.I. // Found. of Phys. Lett., v. 17, 203 (2004).
2. Adamenko S. V., Vysotskii V.I. // Found. of Phys., v. 34, 1801 (2004).
3. Controlled Nucleosynthesis. Breakthroughs in Experiment and Theory, (Eds: S. Adamenko, F.Selleri, A.van der Merwe), Springer, 2007

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Date submitted: 24 Feb 2009

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