EXPERIMENTAL RESEARCH OF PROPERTIES OF CONDENSED EXCITED MATTER (RYDBERG MATTER) BY ELECTROPHYSICAL AND OPTICAL METHODS

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Theoretical studies [1] show that under certain conditions the matter can transform into the condensed excited matter (Rydberg matter – RM). At present, the RM theory is not adequately supported by the experimental work.

We performed an experimental investigation using the technology developed at the Chalmers University (Sweden) [2]. We succeeded in repeating the “Swedish” results by the main characteristics of a thermionic converter (TIC) – the collector emitting work function decreased from the initial value of 1.5 eV to 1.0 eV, and the barrier index decreased from 2.0 eV down to 1.6 eV. These values remained low also after the transition to a conventional equilibrium cesium supply, which is important and new as compared to the data obtained in preceding years [3]. Such low barrier index was obtained for the first time; this essentially increases the low-temperature TIC efficiency and opens up the new possibilities of the use of this phenomenon for the solution of applied problems.

References

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