

Abstract Submitted
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Neutron production in deuterium gas-puff z-pinch with outer plasma shell at current of 3 MA¹ J. CIKHARDT, D. KLIR, K. REZAC, B. CIKHARDTOVA, J. KRAVARIK, P. KUBES, O. SILA, Czech Technical University in Prague, A.V. SHISHLOV, R.K. CHERDIZOV, F.I. FRUSOV, V.A. KOKSHENEV, N.E. KURMAEV, A. YU. LABETSKY, N.A. RATAKHIN, Institute of High Current Electronics SB RAS, G.N. DUDKIN, A.A. GARAPATSKY, V.N. PADALKO, V.A. VARLACHEV, National Research Tomsk Polytechnic University, K. TUREK, J. KRASA, Academy of Sciences of the Czech Republic — Z-pinch experiments at the current of about 3 MA were carried out on the GIT-12 generator. The outer plasma shell of deuterium gas-puff was generated by the system of 48 plasma guns. This configuration exhibits a high efficiency of the production of DD fusion neutrons with the yield of above 10^{12} neutrons produced in a single shot with the duration of about 20 ns. The maximum energy of the neutrons produced in this pulse exceeded 30 MeV. The neutron radiation was measured using scintillation TOF detectors, CR-39 nuclear track detectors, bubble detectors BD-PND and BDS-10000 and by several types of nuclear activation detectors. These diagnostic tools were used to measure the anisotropy of neutron fluence and neutron energy spectra. It allows us to estimate the total number of DD neutrons, the contribution of other nuclear reactions, the amount of scattered neutrons, and other parameters of neutron production.

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Jakub Cikhardt
Czech Technical University in Prague

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