

Abstract Submitted
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Deuterium Gas-Puff Z-pinch as a Source of Fast Ions Producing Intensive Pulse of Neutrons¹ K. REZAC, J. CIKHARDT, B. CIKHARDTOVA, D. KLIR, J. KRAVARIK, P. KUBES, O. SILA, FEE CTU in Prague, A. SHISHLOV, R. CHERDIZOV, F. FURSOV, V. KOKSHENEV, B. KOVALCHUK, N. KURMAEV, A. LABETSKY, N. RATAKHIN, IHCE, RAS, Tomsk, K. TUREK, Academy of Sciences of the Czech Republic — A deuterium gas-puff with outer plasma shell has been examined on GIT-12 generator (on the current level of 3 MA) since 2013. Such a configuration caused more stable implosion at final stage of z-pinch. The consequence of this was a production of intensive pulses of fast ions. During last 4 campaigns in 2013-2015, fast ions were examined by several in-chamber diagnostics such as: stack detector (ion energy), pinhole camera (location of ion source), multi-pinhole camera (asymmetry and anisotropy of ion emission), and ion beam detector (dynamics of ion pulses). A CR-39 track detectors and also GAFCHROMIC HD-V2 films from these diagnostics will be presented. On the basis of obtained results, the solid sample for increasing of neutron yield up to $1e13$ could be placed below the cathode mesh. Except of neutron yield, other properties such as: neutron energies (up to 33 MeV), neutron emission time (about 20 ns), and emission anisotropy of neutrons were measured. Such a short and intensive neutron pulse provides various applications.

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