

**EXPERIMENTAL RESEARCH OF NEUTRON YIELD AND SPECTRUM FROM  
DEUTERIUM GAS-PUFF Z-PINCH ON THE GIT-12 GENERATOR  
AT CURRENT ABOVE 2 MA**

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The Z-pinch experiments with deuterium gas-puff surrounded by an outer plasma shell at currents of 2 MA were carried on the GIT-12 generator (Tomsk, Russia). The plasma shell consisting of hydrogen and carbon ions was formed by 48 plasma guns. The deuterium gas-puff was created by a fast electromagnetic valve. This configuration provides an efficient mode of the neutron production in DD reaction, and the neutron yield reaches a value above  $1e12$  neutrons per shot. Neutron diagnostics included scintillation TOF detectors for determination of the neutron energy spectrum, bubble detectors BD-PND and BDS-1000, a silver activation detector, a Sodium Iodide (NaI) detector, a high-purity Germanium (HPGe) detector and several activation samples for determination of the neutron yield. Using this neutron diagnostic complex, we measured the total neutron yield, the anisotropy of neutron fluence, amount of high-energy neutrons and neutron energy spectrum.

***Keywords:*** *z-pinch, gas-puff, neutron diagnostics, neutron activation.*