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Measurements of D-D neutrons in Z-pinches¹ D. KLIR, J. KRAVARIK, P. KUBES, K. REZAC, Czech Technical University, Faculty of Electrical Engineering, YU.L. BAKSHAIEV, P.I. BLINOV, A.S. CHERNENKO, S.A. DANKO, V.D. KOROLEV, E.V. KRAVCHENKO, A.YU. SHASKOV, G.I. USTROEV, RRC Kurchatov Institute, Moscow, M.I. IVANOV, Institute of Pulsed Systems, Moscow — Fusion neutron measurements have been carried out on a small Z-pinch device (Z-150, CTU in Prague, 100 kA, 800 ns) as well as on a large Z-pinch generator (S-300, Kurchatov Institute in Moscow, 3 MA, 100 ns). The main goal of this research was to give an insight into the acceleration of fast ions and electrons, i.e. the most energetic processes in Z-pinches. For that purpose we used various deuterated Z-pinch loads and we studied the production of D-D neutrons together with the emission of soft and hard X-rays. The emphasis was put on the finding of (i) the evolution of Z-pinch plasmas, (ii) the time and duration of neutron production, (iii) the time and duration of X-ray generation, (iv) the region of X-ray emission, (v) neutron yields, (vi) X-ray energies, (vii) the neutron energy distribution function, (viii) the anisotropy of neutron emission, (ix) the plasma current and voltage. Having obtained these pieces of information, the acceleration mechanism could be discussed.

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