

Abstract Submitted
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The spectral-angular distribution measurements of fast protons from the rear side of a target in experiments on the SOKOL-P facility at laser intensity of 10^{19} W/cm² D.S. GAVRILOV, D.A. VIKHLYAEV, S.A. GOROKHOV, D.A. DMITROV, A.L. ZAPYSOV, A.G. KAKSHIN, I.A. KAPUSTIN, E.A. LOBODA, V.A. LYKOV, A.V. POTAPOV, V.A. PRONIN, G.N. RYKOVANOV, V.N. SANZHIN, V.N. SAPRYKIN, K.V. SAFRONOV, P.A. TOLSTOUKHOV, A.A. UGODENKO, O.V. CHEFONOV, A.V. ANDRIYASH, RFNC-VNIITF — The developed in RFNC-VNIITF 10-TW “SOKOL-P” laser facility was put into operation in 2002. It delivers the 0.8 ps of pulse duration and up to 8 J of on target energy. The mean intensity of $>10^{19}$ W/cm² of high contrast irradiation have been achieved with the help of the off-axis parabola $f/1.5$, providing 6 μm FWHM focal spot. The ns scale intensity contrast ratio is $> 2*10^{11}$, the energy contrast ratio (to non-ionizing 1 ms ASE pedestal) is $2*10^6$. Due to the high value of contrast ratio ultra thin Al foils down to 0.08 μm thick are not damaged before the main pulse arrival. Spatial-energy spectrum of fast protons (energies of 1...8 MeV) measured by two types of spectrometers; up to 1.5% of conversion efficiency of laser energy to proton energy; and 9 MeV of maximum proton energy have been obtained in laser based acceleration experiments.

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