Laser-plasma bremsstrahlung source for high density objects radiography

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Laser-solid target (W, 0.5÷3.5 mm thickness) interaction bremsstrahlung generation experiments have been performed on picosecond laser facility with on target laser intensity $\sim 10^{19}$ W/cm^2.
Measured bremsstrahlung photons energy distributions had temperatures from 0.3 MeV to 1.3 MeV. The growth of bremsstrahlung radiation yield (E_γ>0.1 MeV) in the direction of laser beam propagation was detected when W target thickness increased. Laser pulse energy to bremsstrahlung conversion linearly rose with on target laser intensity. The bremsstrahlung radiation angular distribution contraction was observed with increasing target thickness. The maximum bremsstrahlung yield (E_γ>0.1 MeV) of ∼0.16 J/sr was registered in the direction of laser beam propagation behind W target 3.5 mm thick, $\eta_{2\pi}$=(3.0±0.2)% conversion efficiency was achieved.
As a test 40 mm thick steel objects were imaged by using the source.