

X-ray diagnostics of magnetic reconnection in collided laser-induced plasma flows

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The present work aims at the experimental investigation of the magnetic reconnection phenomena during the interaction of laser plasma flows in a strong magnetic field (up to 30 T) and with a laser energy of 200 J. A compression of the antiparallel component and a decrease in reconnection efficiency are observed. At the same time, we observe a delayed heating of the plasma and an enhanced particle acceleration. Hybrid 3D simulations confirm these observations and illustrate the inhibition of the plasma heating and the decrease of the reconnection efficiency for these obliquely oriented flux tubes.