

Abstract Submitted  
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**High-power laser experiments to study collisionless shock in counter-streaming plasmas** YOUICHI SAKAWA, ILE, Osaka Univ, Japan, Y. KURAMITSU, T. MORITA, H. AOKI, H. TANJI, T. IDE, T. NORIMATSU, T. KATO, Osaka Univ, Japan, J. WAUGH, C. GREGORY, N. WOOLSEY, York Univ, UK, A. DIZIERE, M. KOENIG, LULI, France, Y. ZHANG, X. LIU, S. WANG, Q. DONG, Y. LI, IOP, China, J. ZHONG, NAO, China, J. ZHANG, Shanghai Jiao Tong Univ, China, H. TAKABE, Osaka Univ, Japan, GOD TEAM, PDT TEAM, TFT TEAM, EMP TEAM, PPD TEAM — In this paper we investigate laboratory experiments to study collisionless shock generation in counter-streaming plasmas using Gekko XII HIPER laser system (352 nm ( $3\omega$ ), 500 ps,  $< 1015$  W/cm<sup>2</sup>) at ILE, Osaka University. 60  $\mu$ m thick CH double-plane targets with the separation of 4.5 mm were used. Beams were irradiated on the 1st CH plane, and an ablation plasma was formed. Plasma from the 2nd CH was created by radiation and/or plasma from the 1st CH. The plasmas and shocks were diagnosed transverse to the main laser propagation direction using shadowgraphy, interferometry, and SOP, etc. Counter-streaming plasmas were produced, and shock waves were observed. A particle-in-cell simulation predicted generation of an electrostatic shock. We also investigate an experimental proposal to demonstrate the formation of collisionless shocks through the self-generated magnetic fields due to the beam-Weibel instability.

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