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Annihilation of Magnetic Field in Relativistic Laser-Plasma Interaction and Electromagnetic Burst Generation FRANCESCO PEGORARO, Pisa Univ, Y.J. GU, Instit. Plasma Physics CAS, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic, P.V. SASOROV, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic, Keldysh Institute of Applied Mathematics, Moscow Russia, D. GOLOVIN, A. YOGO, Inst. Laser Engineering, Osaka Univesity, Osaka, Japan, G. KORN, S.V. BULANOV, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic — We investigate the formation and evolution of a relativistic current sheet in a collisionless plasma during magnetic reconnection driven by parallel laser pulses interacting with an underdense plasma target (Electromagnetic Burst Generation during Annihilation of Magnetic Field in Relativistic Laser-Plasma Interaction. Sci Rep 9, 19462 (2019).). Annihilation of the magnetic field of opposite polarity generates a strong non-stationary electric field accelerating charged particles within the current sheet. This laser-plasma target configuration is relevant to the modeling of charged particle acceleration and gamma flash generation in astrophysics.

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