

Abstract Submitted  
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**Generation of intense magnetic field in a counter-streaming system** YAN YIN, National University of Defense Technology — Intense magnetic field generation by excitation of Weibel instability in dense plasmas has been investigated using particle-in-cell (PIC) simulations. As energetic electrons driven by laser propagate in dense plasmas, a return current is excited to compensate the charge neutrality offset. In such a counter-streaming system, Weibel instability is driven, leading to current filamentation and magnetic field generation. The current filaments self-organize in coaxial structures where the relativistic current in the center is surrounded by the return current sheath and intense magnetic field. The magnetic field peaks in the current center with magnitude as high as several hundreds of MegaGauss, and decreases to zero outside the relativistic current. The influences of counter-streaming density and energy on the magnetic field generation are examined.

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