

Abstract Submitted
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Simulation of Weibel Electromagnetic Instability of Electron Beams in Plasma Using the Codes LSP and OSIRIS A. SOLODOV, C. REN, J. MYATT, R. BETTI, Fusion Science Center for Extreme States of Matter and Fast Ignition Physics, Laboratory for Laser Energetics, U. of Rochester, W.B. MORI, UCLA — The Weibel electromagnetic instability can prevent an efficient penetration of relativistic electron beams into the dense core of fast-ignition targets. We simulate the Weibel instability of a beam-plasma system¹ with two particle-in-cell (PIC) codes: LSP and OSIRIS. While OSIRIS is an explicit PIC code, LSP, in addition to the explicit mode, also has an implicit mode, allowing simulations with a larger time step. This is particularly useful for very dense plasmas where the details of electron plasma oscillations can be ignored. LSP can also describe plasma electrons using either fluid or kinetic equations. The similarities and differences of the LSP and OSIRIS results will be discussed. This work has been supported by the U.S. DOE under Cooperative Agreements ER54789 and DE-FC03-92SF19460.

¹R. Lee and M. Lampe, Phys. Rev. Lett. **31**, 1390 (1973).

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