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Particle-in-Cell Simulation Code Comparison for 2D Laser Propagation BRENDAN MCHUGH, NASHAD RAHMAN, CHRIS ORBAN, Ohio State Univ - Columbus — There are a variety of Particle-in-Cell (PIC) codes used today to simulate laser propagation. In this paper, we perform a verification test of three popular codes, namely EPOCH, LSP, and WARPX, testing against the analytic formula for 2D Gaussian laser propagation in a test with no particles. We compare the simulation with the expected behavior to investigate the following effects: peak intensity, beam focusing, spot size, and numerical effects of phase speed on the laser. These simulations were run on the same node on The Ohio State University's Unity Computer cluster for a valid performance comparison of CPU time and memory usage.

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