

Abstract Submitted
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Benefits of Higher-Order Particle Shapes in the Electromagnetic PIC Code VORPAL¹ KEVIN PAUL, DAVID BRUHWILER, PAUL MULLOWNEY, PETER MESSMER, JOHN CARY, Tech-X Corporation, CAMERON GEDDES, ESTELLE CORMIER-MICHEL, ERIC ESAREY, Lawrence Berkeley Lab — Noise is one of the largest hurdles that particle-in-cell (PIC) codes must overcome in order to resolve such phenomena as particle trapping in laser wake-field acceleration (LWFA) and laser-solid interactions in fast ignition fusion scenarios. Using higher-order particle shapes has been shown to substantially reduce this noise. We present results of the implementation of higher-order particle shapes in the electromagnetic and electrostatic PIC code VORPAL, showing the benefits in application to LWFA and laser-solid interactions.

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Kevin Paul
Tech-X Corporation

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