Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Recent Performance Results of VPIC on Trinity[1] W. D. NYSTROM, B. BERGEN, R. F. BIRD, Los Alamos National Laboratory, K. J. BOWERS, None, W. S. DAUGHTON, F. GUO, A. LE, H. LI, H. NAM, X. PANG, D. J. STARK, W. N. RUST III, L. YIN, B. J. ALBRIGHT, Los Alamos National Laboratory — Trinity is a new DOE compute resource now in production at Los Alamos National Laboratory. Trinity has several new and unique features including two compute partitions, one with dual socket Intel Haswell Xeon compute nodes and one with Intel Knights Landing (KNL) Xeon Phi compute nodes, use of on package high bandwidth memory (HBM) for KNL nodes, ability to configure KNL nodes with respect to HBM model and on die network topology in a variety of operational modes at run time, and use of solid state storage via burst buffer technology to reduce time required to perform I/O. An effort is in progress to optimize VPIC[2] on Trinity by taking advantage of these new architectural features. Results of work will be presented on performance of VPIC on Haswell and KNL partitions for single node runs and runs at scale. Results include use of burst buffers at scale to optimize I/O, comparison of strategies for using MPI and threads, performance benefits using HBM and effectiveness of using intrinsics for vectorization.

[1]Work performed under auspices of U.S. Dept. of Energy by Los Alamos National Security, LLC Los Alamos National Laboratory under contract DE-AC52-06NA25396 and supported by LANL LDRD program.
[2]K. J. Bowers, B. J. Albright, L. Yin, B. Bergen, and T. J. T. Kwan, Phys. Plasmas 15, 055703 (2008)

William Nystrom
Los Alamos National Laboratory

Date submitted: 17 Jul 2017 Electronic form version 1.4