Particle-in-cell simulations on graphic processing units C. REN, X. ZHOU, J. LI, M.C. HUANG, Y. ZHAO, University of Rochester — We will show our recent progress in using GPU's to accelerate the PIC code OSIRIS [Fonseca et al. LNCS **2331**, 342 (2002)]. The OISRIS parallel structure is retained and the computation-intensive kernels are shipped to GPU's. Algorithms for the kernels are adapted for the GPU, including high-order charge-conserving current deposition schemes with few branching and parallel particle sorting [Kong et al., JCP **230**, 1676 (2011)]. These algorithms make efficient use of the GPU shared memory. This work was supported by U.S. Department of Energy under Grant No. DE-FC02–04ER54789 and by NSF under Grant No. PHY-1314734

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Date submitted: 11 Jul 2014　　　　　　　　　　Electronic form version 1.4