Abstract Submitted
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WarpX: implementation and performance on GPUs[1] RÉMI LEHE, Lawrence Berkeley National Laboratory — WarpX is an advanced electromagnetic Particle-In-Cell code, and is part of the DoE Exascale Computing Project (ECP). The code provides many powerful features for large-scale simulations of plasmas (e.g. mesh refinement, load balancing, perfectly-matched layers), and in particular for intense laser-plasma interactions (e.g. boosted-frame, spectral solvers, quasi-cylindrical geometry). The code was recently ported to GPUs, and runs at scale on the Summitsuper- computer. We will describe the key components of the GPU implementationof WarpX, and how they allowed us to rapidly port the code while avoiding codeduplication. We will also discuss the performance of the code on Summit,as well as the main limiting factors to overcome in order to reach additional-speedup.

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