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**Long time electron cloud instability simulation using QUICKPIC with pipelining algorithm** BING FENG, University of Southern California, P. MUGGLI TEAM, T. KATSOULEAS TEAM, V. DECYK COLLABORATION, C. HUANG COLLABORATION, W. MORI COLLABORATION — We proposed a novel algorithm, which uses pipelining to reduce the simulation time for beam-electron cloud interaction. In the pipelining algorithm the processors are divided into subgroups, and during the simulation different groups will be on consecutive time steps. The pipelining algorithm is applied to the fully parallelized Particle-In-Cell (PIC) code QuickPIC to overcome the limit of the number of processors that can be used at each time step. With the new algorithm, the accuracy of the simulation is preserved; and the speed of the simulation is improved by a factor proportional to the number of processors available. The long term beam evolution results for the CERN-LHC using the QuickPIC with pipelining algorithm are presented.

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