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Recent progress on QuickPIC and QPAD

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QuickPIC and QPAD are both parallel PIC codes that apply the quasi-static approximation. They can efficiently simulate both beam driven and laser driven plasma wake field accelerators with a speed that is much faster than the conventional PICs code without losing accuracy. QuickPIC is a 3D code in the Cartesian coordinates while QPAD is a branch of QuickPIC that applies azimuthal decomposition in cylindrical coordinates. In this work, we will introduce our recent developments on explicit solvers in both QuickPIC and QPAD. We will also introduce the progress on radiation module and the basic algorithm of a GPU + MPI version of QuickPIC.

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