Recent Progress on QuickPIC

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QuickPIC [1] is a widely used 3D parallel quasi-static spectral PIC code. It can efficiently simulate either the beam driven or laser driven plasma based accelerator. The code is available on Github.com [2] and Gitee.com [3]. In this talk, we will present the progress on the laser module in the open source QuickPIC. We also add a new field ionization module that applying the particle ionization method instead of the mesh ionization method that used in the old version of QuickPIC. The new module can simulate mobile ions that generated during the field ionization process. In addition, the diagnostic module for the beam's betatron radiation has also been merged into QuickPIC. At last, we will show the results from the GPU version of QuickPIC.

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References

[1] Weiming An et al, An improved iteration loop for the three dimensional quasi-static particle-in-cell algorithm: QuickPIC, Journal of Computational Physics 250, 165-177 (2013).

[2] https://github.com/UCLA-Plasma-Simulation-Group/QuickPIC-OpenSource

[3] https://gitee.com/bnu-plasma-astrophysics-sg/quick-pic-open-source.git