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Macroparticle collisionality in PIC solver

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Traditionally PIC solver compute electric field created by the beam as a mean field. The effect of particle collisions is normally neglected by the algorithm. In this proceeding we address how to include the collisions between the macro particles, and discuss the computational challenges and strategies to include the collisionallity in PIC solvers as particle-particle interaction. We present simulations that benchmark our understanding and analyse potential artifacts as energy conservation or other effects.

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