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Simulations and Performance

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Numerical simulations are critical in the development and design of plasma-based acceleration concepts. Particle-in-cell (PIC) approach with its recent advanced algorithms is a widely used tool for the investigation of both laser- and beam-driven plasma acceleration. However, the actual performance depends on the critial parameters of the plasma acceleration process together with their error range, for which a deviation from the design value could result in a significant impact on the beam quality. The most recent results of simulations performed in the framework of the EuPRAXIA project, including laser-driven and beam-driven plasma acceleration, internal and external injection, will be in particular presented.

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