

Optimum parameters for Radiation Pressure Acceleration

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This work focuses on the optimization of the RPA beam quality in dependence of the laser and target parameters:

- A relativistic two fluid model of the laser plasma interaction is derived. From this analytical model, two important perceptions will be obtained: 1) An approximation to the maximum achievable kinetic energy. Within this, a termination criterion for the RPA mechanism is achieved, above which the acceleration process collapses. 2) The optimization of the RPA: An analytical prediction is supported by a 1D PIC simulation, to work out the optimum working point for the acceleration process.

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