Comparison of electron acceleration efficiency with a powerful laser pulse propagating in a self-trapping mode for two regimes laser bullet and bubble.

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The most effective mechanism for laser acceleration of electrons is the relativistic self-capture of a powerful light pulse, which allows one to achieve the limiting values of the laser energy conversion coefficient, can be implemented in characteristic regimes called "laser bullet" and "bubble". Since estimates show that the total energies of electrons accelerated in these modes are comparable in order of magnitude, a quantitative comparison requires 3D PIC numerical simulations. Such sumulation was carried out for relativistically intense ultrashort (6-20 fs) laser pulses of Joule energy level. With regard to radiation-nuclear applications, the results obtained indicate a higher yield of high-energy electrons accelerated in the laser bullet regime, with the exception of extremely short pulse durations, $\lesssim 10$ fs, for which both modes provide approximately the same yield of high-energy electrons (over 30 MeV).