

Study on the recovery of the beam energy of International Linear Collider (ILC) by plasma-wakefield deceleration.

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The International Linear Collider (ILC) is the future electron-positron collider machine that will reach the energy frontier of elementary-particle physics at the center-of-mass energy of 500 GeV. The ILC is expected to reveal the precise properties of the Higgs particle and the physics beyond the standard model. The ILC group published the Technical Design Report (TDR) of the machine in June 2013. In the TDR, it is described that the energy consumption of ILC is about 200 MW and the beam energy of electron and positron is 10 MW in total which is dumped after the interaction of beams. In the situation that recent progress of plasma-wakefield physics, we started to study on the recovery of electron and positron energies at the beam dump by the method of plasma-wakefield deceleration, where the recovered energy will be re-used for the operation of the machine and we can expect less radiation problem at the beam dump. In this article, the recent status of this study will be presented.

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