

Abstract Submitted
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Detrapping accelerations in a strong electron-beam TSUYOSHI TAKEDA, KEIICHIRO YAMAGIWA, Shizuoka University — Modulation instabilities and particle-trapping have been observed in space plasmas, and thus it is important to simulate such phenomena in laboratory experiments. In our previous works, electron-beam holes induced by self-trapping were experimentally turned up in phase-space in a weak electron-beam, and their behaviors from emergences to collapses were exhibited [1]. In this work, the self-trapping is further investigated in a strong electron-beam. It is observed that electron-beam branches are formed next to the holes in the high velocity side, and expand with time. These imply that the beam-electrons are detrapped from potential wells of a wave packet. It is confirmed with plotting velocity tips of the branches that the square velocities are proportional to the positions. This proves that accelerations for the beam occur as a result of taking away the wave energy. The holes may play an important role in the accelerations.

[1] T. Takeda and K. Yamagiwa, *Phys. Lett. A*, **339**, 118-122 (2005).

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