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Energy recovery in an optical linear collider

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It is demonstrated that recovery of the electromagnetic energy of the fundamental mode at the output of an acceleration structure leads to a significant efficiency enhancement. When using a single bunch, the number of electrons accelerated is rather small. In fact, this number is virtually identical to the case when no feedback loop is employed. To increase this number, in parallel with the efficiency enhancement associated with the feedback loop, it is necessary to split the bunch into a train of microbunches—this last process leads to suppression of high-order modes.

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