Abstract Submitted
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Maximum attainable ion energy in the radiation pressure acceleration regime[1] STEPAN BULANOV, University of California, ERIC ESAREY, CARL SCHROEDER, LBNL, SERGEY BULANOV, TIMUR ESIRKEPOV, MASAKI KANDO, JAEA, FRANCESCO PEGORARO, University of Pisa, WIM LEEMANS, LBNL — Radiation Pressure Acceleration is a highly efficient mechanism of laser driven ion acceleration, with the laser energy almost totally transferrable to the ions in the relativistic regime. There is a fundamental limit on the maximum attainable ion energy, which is determined by the group velocity of the laser. In the case of a tightly focused laser pulses, which are utilized to get the highest intensity, another factor limiting the maximum ion energy comes into play, the transverse expansion of the target. It makes the target transparent for radiation, thus reducing the effectiveness of acceleration. Utilization of an external guiding structure for the accelerating laser pulse may provide a way of compensating for the group velocity and transverse expansion effects.

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