

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Analysis of mobile ions in extreme regime of high intensity beams in plasma wake-field accelerators REZA GHOLIZADEH, TOM KATSOULEAS, PATRIC MUGGLI, University of Southern California, WARREN MORI, University of California Los Angeles — We investigate the effect on ion motion by high intensity beams in future beam driven plasma wake-field accelerators. We show that the witness beam is indeed the main concern since we can design the drive beam to reduce the undesirable effects. We compare Hydrogen, Lithium and Xenon as plasma gases and show that Argon is perhaps the best choice. We, then analyze the problems of using Argon such as trapped electrons, multiple ionization and beam loading.

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Date submitted: 24 Jul 2006

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