

Abstract Submitted  
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**Improved neutralized compression and focusing of an intense ion beam using a final focus solenoid** J.E. COLEMAN, P.A. SEIDL, J.A. DUERSCH, D. OGATA, P.K. ROY, K. VAN DEN BOGERT, LBNL, Berkeley, CA 94720, USA, A.B. SEFKOW, E.P. GILSON, PPPL, New Jersey 08543, USA, D.R. WELCH, Voss Scientific, Albuquerque, NM 87108, USA — Future target heating experiments with space-charge dominated ion beams require simultaneous longitudinal bunching and transverse focusing. We present an experiment to simultaneously focus a singly charged potassium ion beam at LBNL. The space charge of the beam must be neutralized so only emittance limits the focused beam intensity. An induction bunching module provides a head-to-tail velocity ramp upstream of a neutralizing plasma column and a final focusing solenoid. The beam parameters are tuned with a four-solenoid lattice to transport the neutralized compressing beam into a final focus solenoid which transversely focuses the beam at the target plane. We have improved the axial focus ( $> 100x$  axial compression,  $< 2$  ns pulses) and reduced the beam spot size. A comparison of experimental and modeling results are presented. (This work was supported by the U.S. D.O.E. under DE-AC02-05H11231 and DE-AC02-76CH3073 for HIFS-VNL)

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