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Plans for near-term neutralized drift compression experiments

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Abstract Submitted
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Plans for near-term neutralized drift compression experiments¹ P.A. SEIDL, LBNL, J.J. BARNARD, LLNL, J.E. COLEMAN, LBNL, UCB, A. FALTENS, LBNL, A. FRIEDMAN, LLNL, E.P. GILSON, PPPL, J.Y. JUNG, E.P. LEE, M. LEITNER, P.K. ROY, LBNL, A.B. SEFKOW, PPPL, J.L. VAY, W.L. WALDRON, LBNL, D.R. WELCH, Voss Scientific, HIFS-VNL COLLABORATION — One approach to target heating experiments with space-charge dominated ion beams is to simultaneously longitudinally bunch and transversely focus the beam. Axial compression leading to $\sim 100X$ current amplification and simultaneous radial focusing have led to encouraging energy deposition approaching, but still short of, intensities required for eV-range target heating experiments. We discuss the status of several improvements and associated beam diagnostics that are under development to reach the higher beam intensities, including: (1) greater axial compression via a higher $\Delta v/v$ velocity ramp using a new bunching module; (2) improved centroid control via beam steering dipoles; (3) time-dependent focusing elements to correct considerable chromatic aberrations; and (4) plasma injection improvements to maintain a plasma density always greater than the beam density.

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