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Progress on neutralized drift compression experiment (NDCX-Ia) for high intensity ion beam P. ROY, S. YU, E. HENESTROZA, W. WALDRON, F. BIENIOSEK, S. EYLON, J. COLEMAN, A. ANDERS, M. LEITNER, W. GREENWAY, D. BACA, D. VANECEK, G. LOGAN, LBNL, Berkeley, CA-94720, USA, D. WELCH, D. ROSE, C. THOMA, MRC, Albuquerque, NM 87110, R. DAVIDSON, P. EFTHIMION, I. KAGANOVICH, E. GILSON, A. SEFKOW, PPPL, NJ 08543, W. SHARP, LLNL, Livermore, CA 94550, LBNL COLLABORATION, MRC COLLABORATION, PPPL COLLABORATION, LLNL (HIF-VNL) COLLABORATION — Transverse and longitudinal beam compression, together, are a promising approach to the high intensities required for depositing the energy to create high energy density matter and fusion ignition conditions. We have experimentally demonstrated that beam space charge can be neutralized by passing the beam through a localized plasma "plug." This makes it possible to focus a beam of several centimeters radius to a millimeter radius. We are also interested in longitudinal drift compression to a short pulse length of a few nanoseconds using neutralization. The NDCX-Ia facility at LBNL has been used to test these techniques. Here a 300 keV, 25-milliamp K^+ ion beam is given a head to tail energy variation using a tilt core induction cell. In the NDCX-Ia, simulations predicting a compression ratio of roughly 60, experimentally we have measured above 50 fold with <5 ns peak width at FWHM. (This work was supported by U.S. Department of Energy under Contract No. DE-AC02-05CH11231).

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