

Abstract Submitted  
for the DPP10 Meeting of  
The American Physical Society

**Effects of Errors of Velocity Modulation on Maximum Longitudinal Drift Compression of an Intense Neutralized Ion Beam**<sup>1</sup> S. MASSIDDA, Columbia University, I. KAGANOVICH, E. STARTSEV, R. DAVIDSON, PPPL — Neutralized drift compression offers an effective means for particle beam focusing and current amplification with applications to heavy ion fusion. An ion beam pulse is passed through an inductive bunching module that produces a longitudinal velocity modulation. Due to applied velocity tilt the beam pulse compresses during neutralized drift. The ion beam pulse can be compressed by a factor of more than 100; however errors in the velocity modulation affect this compression in complicated ways. We have performed an analytical and numerical study of how the longitudinal compression of the ion beam is affected by the initial errors in velocity. Higher errors generally proportionally decrease compression. However, some parts of a beam pulse with large errors in the velocity tilt compress to high values while other parts do not compress at all. Without any errors an ideal compression is limited only by the initial thermal velocity of the ion beam. Compression with an exponential velocity tilt is compared to an ideal limit.

<sup>1</sup>Research supported by US DOE.

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Date submitted: 17 Jul 2010

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