Abstract Submitted
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Compression Regimes in a Kinetic Model of Rotating Wall Compression of Electron-Antiproton Plasma via Coupling to ExB Rotation Mode[1] MALCOLM LAZAROW, EUGENE KUR, University of California, Berkeley, ANDREY ZHMOGINOV, Google, JONATHAN WURTELE, JOEL FAJANS, University of California, Berkeley — Non-neutral plasma compression has applications ranging from maintaining trapped plasmas to antihydrogen synthesis. The theory of plasma compression via application of a rotating wall (RW) potential coupling to Trivelpiece-Gould modes is well-developed [1]. Here we continue our investigation of a kinetic model of RW compression coupling instead to ExB rotation [2] inspired by antiproton-electron multispecies compression used by the ALPHA collaboration for antihydrogen synthesis [3,4]. Using simulations we identify and explore three distinct regimes of compression: strong compression (also called strong drive [5]), weak compression, and cut-off, where the plasma rotation reaches the RW frequency, a fraction of the RW frequency, or remains relatively unchanged, respectively. We identify dimensionless parameters governing these regimes and discuss the implications of this model for effective plasma compression. [1]: Anderegg, F., et al. *Physical Review Letters* 81.22 (1998): 4875. [2]: Zhmoginov, Andrey, et al. *APS* 2014 (2014): BP8-110. [3]: Gutierrez, A., et al. *TCP 2014*. Springer, Cham, 2017. 109-116. [4]: Andresen, G. B., et al. *Physical review letters* 100.20 (2008): 203401. [5]: Danielson, J. R., et al. *Physical review letters* 94.3 (2005): 035001.

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