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New Mechanism for Single-Component Plasma Loss from Asymmetric Potentials[1] N.C. HURST, J.R. DANIELSON, C.J. BAKER, C.M. SURKO, University of California, San Diego — The manipulation of single-component plasmas in a Penning-Malmberg trap often requires the use of applied asymmetric potentials.[2,3,4] While it has long been known that these asymmetries can cause plasma expansion,[5] it is shown here that direct particle loss may also occur; and this is deleterious for many applications, especially antimatter storage. The plasma self-potential and the applied potential superpose to form a separatrix, and this can result in the $E \times B$ drift of plasma particles out of the trap. A simple model is presented which captures the observed behavior. The analogy of this effect to the stripping of a 2D vortex by a shear flow will be discussed.

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[3]Fajans, Gilson, Friedland, *Phys. Rev. Lett.* **82**, 4444 (1999).
[4]Hurst, Danielson, Baker, Surko, *Phys. Rev. Lett.*, **113** 025004 (2014).
[5]Kriesel and Driscoll, *Phys. Rev. Lett.* **85**, 2510 (2000).

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