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**Production of Coherent Phase Space Islands in Trapped Plasma**

ERIC HUNTER, University of California, Berkeley, ALEX POVILUS, Lawrence Livermore Natl Lab, NATHAN BELMORE, NICOLE LEWIS, SABRINA SHANMAN, JOEL FAJANS, University of California, Berkeley — Particles are coherently extracted from a cold Maxwellian distribution into phase space islands by applying a fixed-frequency RF drive while the plasma bounce frequency is swept downward by lowering the potential confining the plasma. These objects can appear spontaneously in pure electron and mixed ion plasma experiments during particle extraction when the noise power spectrum of the confining potential has peaks in the rf band, as is often the case in a laboratory environment. Interestingly, the particles in these islands have been observed to form tight energy distributions, making the mechanism potentially useful for low energy/monoenergetic plasma injection devices. In particular, these features would be useful for antimatter spectroscopy and mixing for antihydrogen formation. This work is supported by DoE, Grant DE-FG02-06ER54904.

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