

Abstract Submitted
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Autoresonant BGK Modes¹ PAVEL KHAIN, LAZAR FRIEDLAND,
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Physics, Ekaterinburg, Russian Federation — Coherent electron phase-space struc-
tures are formed and controlled in plasmas by adiabatic nonlinear phase locking (au-
toresonance) with a chirped frequency driving wave. The process involves dragging
a low density region in phase space into the bulk of the distribution via persistent
Cherenkov-type resonance. This perturbation in electron density leads to creation of
electrostatic self-field (BGK mode) in the plasma. A simplified kinetic theory of this
excitation process is developed in cases of flattop [1] and Gaussian velocity distribu-
tions. The self-field dependence on the driving frequency and plasma parameters is
discussed and theoretical predictions are compared with computer simulations. [1]
L. Friedland, P. Khain, and A.G. Shagalov, Phys. Rev. Lett. **96**, 225001 (2006).

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