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Observation of multiple chirping events in electron cyclotron emission of non-equilibrium mirror-confined plasma MIKHAIL VIKTOROV, ALEXANDER SHALASHOV, DMITRY MANSFELD, SERGEY GOLUBEV, The Institute of Applied Physics of the Russian Academy of Sciences — Chirping frequency patterns have been observed in the electron cyclotron emission from a strongly non-equilibrium mirror-confined plasma created by powerful microwave radiation of gyrotron (37.5 GHz, 80 kW) under ECR conditions. The dynamic spectrum of emission is a set of highly chirped radiation bursts with both increasing and decreasing frequencies. Such patterns are typical for the formation of nonlinear phase-space structures in a proximity of the wave-particle resonances of a kinetically unstable plasma, also known as the "holes and clumps" mechanism or Berk-Breizman model [1]. Our data provide the first experimental evidence for the acting of this mechanism in the electron cyclotron frequency domain [2]. Following the Berk-Breizman model, the frequency drift within each wave packet is proportional to the instability growth rate and has a predetermined time dependence. Resulting from the analysis of the microwave emission spectrum, the value of the growth rate is consistent with previous studies of excitation of extraordinary waves at the stage of plasma decay, which confirms the applicability of the model. [1] H.L. Berk, B.N. Breizman, N.V. Petviashvili, *Phys. Lett. A* , V.234, P.213 (1997). [2] M.E. Viktorov, *et al.*, *EPL*, V.116, P.55001 (2016)

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