Space Charge Effects in the Cyclotron-Resonance Laser Accelerator[†], F.O. COUTO, R. PAKTER, F.B. RIZZATO, IF-UFRGS Brasil; I.L. CALDAS, IF-USP Brasil - In this work we study the effects of beam electrostatic interactions in the dynamics of a Cyclotron-resonance Laser Accelerator. To this aim we develop a Hamiltonian formalism that takes into account both particles and electrostatic field dynamics under the macroparticle approximation and disregarding azimuthal dependences on the field. It is compared the limitation on particle energization imposed by space charge effects and those related to dispersion on the laser[1,2]. It is also analysed the onset of chaos due to the space charge effects.

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2 R. Pakter, R.S. Schneider and F.B. Rizzato, Phys. Rev. E, 49, 1594 (1994).