NUMERICAL SIMULATION OF THE DEVELOPMENT OF AN ION CYCLOTRON PARAMETRIC INSTABILITY UNDER SELECTIVE SEPARATION OF ISOTOPES BY ICR METHOD

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The development of a parametric instability of ion Bernstein modes under selective separation of Li^6 and Li^7 isotopes by the ICR method is considered, which is important for the controlled fusion problem. It is shown that, under the separation of these isotopes, the oscillations of ions of different species relative to each other across the magnetic field under the action of forced Alfven oscillations can result in the excitation of parametrically unstable shortwave electrostatic ion cyclotron oscillations, when the ion cyclotron resonance condition is met. The numerical simulation of the evolution of this instability by means of a macroparticle technique under the separation of lithium isotopes by the ICR method has shown that its development leads to the turbulent heating of both resonant and nonresonant isotopes and, as a consequence, to the selection efficiency deterioration of the resonant isotope from plasma.