Study of the nonresonant Buneman instability throughout the negative diffusion equation MOHAMMAD MOHSEN HATAMI, Beheshti University, G. C., Laser-Plasma Research Institute, Evin, Tehran, Iran, BABAK SHOKRI, Shahid Beheshti University, G. C., Phys. Dept. and Laser-Plasma Research Inst., Evin, Tehran, Iran, ALI REZA NIKNAM, Beheshti University, G. C., Laser-Plasma Research Institute, Evin, Tehran, Iran — Using hydrodynamics equations for a weakly ionized quasineutral plasma, the dynamic behavior of the plasma density is investigated when the plasma is under the development of the low-frequency nonresonant Buneman instability. It is assumed that a constant electric field acts on the plasma and the collision between the charged particles and the neutrals is taken into account. In this case, it is shown that the plasma density satisfies a nonlinear diffusion-like equation with negative diffusion coefficient. Using Adomian decomposition method to solve this equation, it is shown that the small perturbations of the plasma density are amplified and the density profile is steepened due to development of the Buneman instability.

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