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Solitary wave evolution in inhomogeneous electron-positron pair plasma having dust grains RAKHEE MALIK, HITENDRA K. MALIK, SUBASH C. KAUSHIK, IIT Delhi — Main concern of the present article are to investigate the possible modes and their evolution as soliton in inhomogeneous electron-positron plasma having stationary negatively charged dust particles. The Korteweg-de Vries (KdV) like equation with an additional term due to density gradients is deduced by employing reductive perturbation technique. An investigation on the existence and propagation of the modes in such a plasma model reveals that two types of modes are possible. The KdV equation is solved for its solitary wave solution. It is observed that both the modes evolve in the form of density hill type structures in the plasma, confirming that these solitary structures are compressive in nature. The amplitude and width of the soliton are studied regarding to plasma parameter such as positron-to-electron temperature ratio, density of positrons and dust density. It is observed that the tailing structure is not prominent in the present plasma model.

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