Abstract Submitted
for the GEC20 Meeting of
The American Physical Society

Evolution of heavy nucleus acoustic shocks in white dwarfs KULDEEP SINGH, Guru Nanak Dev University, Amritsar, India-143005, N. S. SAINI, Guru Nanak Dev University — There has been a large interest in studying the relativistic degenerate dense plasmas due to its existence in interstellar compact objects, such as white dwarfs, neutron stars. It is notable that the basic constituents of white dwarfs are mainly positively and negatively charged heavy elements like carbon, oxygen, helium with an envelope of hydrogen gas. The existence of heavy elements (positively and negatively) is found to form in a prestellar stage of the evolution of the universe, when whole matter was compressed to extremely high densities. We have investigated heavy nucleus-acoustic (HNA) shock waves and solitons in a degenerate relativistic magneto-rotating quantum plasma (DRMQP) system containing relativistically degenerate electrons and light nuclei, and non-degenerate mobile heavy nuclei. Only positive potential HNA shock waves and solitons have been found in consonance with the satellite observations. It is observed that the heavy nucleus viscosity is a source of dissipation, and is responsible for the formation of HNA shock structures. It is shown that the combined effects of external magnetic field strength, rotational frequency and obliqueness significantly modify the basic properties of the HNA shock waves and solitons. It is intensified that the combined effects of magnetic field and Coriolis force are not considered in degenerate relativistic plasma system. The results should be utilitarian to understand the characteristics of nonlinear excitations in degenerate relativistic magnetorotating quantum plasma which is present in astrophysical compact objects especially in white dwarfs

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Date submitted: 11 Jun 2020 Electronic form version 1.4