Title	Modulated heavy nucleus-acoustic waves and associated rogue waves in a degenerate relativistic quantum plasma system.
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Abstract

A theoretical and numerical investigation has been carried out on amplitude modulated heavy nucleus-acoustic envelope solitons (HNAESs) in a degenerate relativistic quantum plasma (DRQP) system containing relativistically degenerate electrons and light nuclei, and non-degenerate mobile heavy nuclei. The cubic nonlinear Schrödinger equation, describing the nonlinear dynamics of the heavy

nucleus-acoustic waves (HNAWs), is derived by employing a multi-scale perturbation technique. The dispersion relation for the HNAWs is derived, and the criteria for the occurrence of modulational instability of the HNAESs are analyzed. The localized structures (viz., envelope soli tons and associated rogue waves) are found to be formed in the DRQP system under consideration. The basic features of the amplitude modulated HNAESs and associated rogue waves formed in realistic DRQP systems are briefly discussed.