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Super Rogue Waves in Superthermal Space Plasmas NARESHPAL SAINI, Department of Physics, Guru Nanak Dev University, Amritsar-143005 — Dusty plasmas have attracted a great deal of attention due to its applications in industry, technology and other areas of modern science. A different kinds of wave modes formed in dusty plasmas have been studied to understand the underlying physics in laboratory, space and astrophysical environments. Among nonlinear structures, rogue waves are found to occur in different environments. The effect of polarization force and other plasma parameters have been studied on rogue waves in dusty plasmas comprising of hot electrons and non-Maxwellian ions. Multiple scale perturbation technique is employed to derive non-linear Schrodinger equation. Its rational solutions are determined. The critical wave number threshold where the modulational instability sets in is determined. The variation of critical wave number is analysed under the influence of various physical parameters. The combined effects of plasma parameters significantly influence the amplitude and formation of rogue waves. We have also studied the super rogue waves and rogue wave triplets This study may be helpful in understanding the formation of nonlinear structures in space/astrophysical environments.

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